USER'S MANUAL

AXIS Q7414 Video Encoder Blade

www.use-ip.co.uk
01304 827609

Notices

This manual is intended for administrators and users of AXIS Q7414 Video Encoder Blade, and is applicable for firmware release 5.25 and later. It includes instructions for using and managing the encoder on your network. Previous experience of networking will be of use when using this product. Some knowledge of UNIX or Linux-based systems may also be beneficial, for developing shell scripts and applications. Later versions of this document will be posted to the Axis Website, as required. See also the product's online help, available via the Web-based interface.

AXIS Q7414 supports ONVIF v1.02. For more information about ONVIF go to www.onvif.org For more information about enabling ONVIF go to the developers page at www.axis.com

Liability

Every care has been taken in the preparation of this manual. Please inform your local Axis office of any inaccuracies or omissions. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Axis Communications AB makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Axis Communications AB shall not be liable nor responsible for incidental or consequential damages in connection with the furnishing, performance or use of this material.

Intellectual Property Rights

Axis AB has intellectual property rights relating to technology embodied in the product described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the patents listed at http://www.axis.com/patent.htm and one or more additional patents or pending patent applications in the US and other countries.

This product contains licensed third-party software. See the menu item "About" in the product's user interface for more information.

This product contains source code copyright Apple Computer, Inc., under the terms of Apple Public Source License 2.0 (see http://www.opensource.apple.com/apsl/).
The source code is available from:
http://developer.apple.com/darwin/projects/bonjour/

Equipment Modifications

This equipment must be installed and used in strict accordance with the instructions given in the user documentation. This equipment contains no user-serviceable components. Unauthorized equipment changes or modifications will invalidate all applicable regulatory certifications and approvals.

Trademark Acknowledgments

Apple, Boa, Bonjour, Ethernet, Internet Explorer, Linux, Microsoft, Mozilla, Real, SMPTE, QuickTime, UNIX, Windows, Windows Vista and WWW are registered trademarks of the respective holders. Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. Axis Communications AB is independent of Sun Microsystems Inc.
UPnP™ is a certification mark of the UPnP™ Implementers Corporation.

Support

Should you require any technical assistance, please contact your Axis reseller. If your questions cannot be answered immediately, your reseller will forward your queries through the appropriate channels to ensure a rapid response. If you are connected to the Internet, you can:

- download user documentation and firmware updates
- find answers to resolved problems in the FAQ database. Search by product, category, or phrases
- report problems to Axis support by logging in to your private support area
- visit Axis Support at www.axis.com/techsup

AXIS Q7414 Video Encoder Blade User's Manual
Rev. 1.1
Copyright© Axis Communications AB, 2011
November 2011 Part no. 45395

Contents

Product Description 4
Key features 4
Overview 5
LED indicators 5
Accessing the video encoder blade 6
Access from a browser 6
Setting the root password 7
Access from the Internet 7
Setting the root password over a secure connection 8
The Live View page 9
Video Streams 11
How to stream H.264 11
Motion JPEG 11
Alternative methods of accessing the video stream 12
Setup Tools 13
Basic Setup 13
Video & Audio 14
Video Stream 14
Camera Settings 16
Overlay Image 16
Privacy mask 17
Audio Clips 18
Live View Config 19
PTZ 22
Installing the PTZ driver 22
Preset positions 23
PTZ Control queue 24
PTZ controls 25
Applications 27
Events 28
Definitions 28
Event Servers 28
Event Types 29
Camera tampering 30
Motion Detection 32
Audio Detection 33
Port Status 33
System Options 34
Security 34
Date & Time 35
Network 36
Ports & Devices 40
Maintenance 41
Support 42
Configuration 42
Advanced 42
About 43
Resetting to the Factory Default Settings 44
Unit connectors 45
Pin assignments 46
Troubleshooting 48
Checking the Firmware 48
Upgrading the Firmware 48
Technical Specifications 53
General performance considerations 55
Index 56

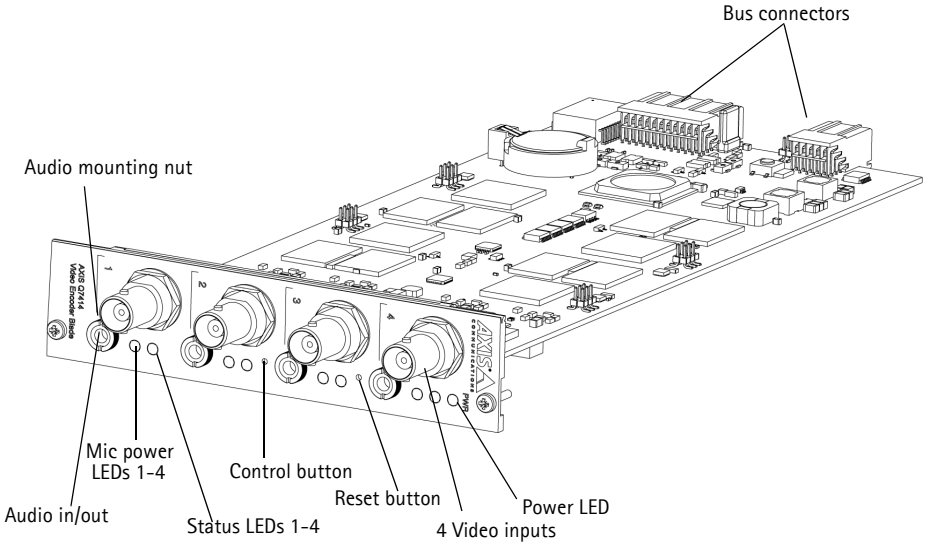
Product Description

This manual applies to AXIS Q7414 Video Encoder Blade.

Key features

- **Full frame rate in H.264 and Motion JPEG in all resolutions**
  AXIS Q7414 can deliver 30/25 fps in all resolutions up to D1 (720x480 in NTSC, 720x576 in PAL) in at least three differently configured streams per channel.
- **Reduced bandwidth and storage using H.264 compression**
  H.264 compression provides streams that use less bandwidth and storage compared with streams of the same image quality in MPEG-4 Part 2.
- **Multiple H.264 and Motion JPEG video streams**
  AXIS Q7414 Video Encoder Blade can deliver multiple, individually configurable streams in full frame rate at the highest resolution in H.264 and/or Motion JPEG from each channel; e.g. one H.264 stream with the highest image quality for live viewing, one stream with higher compression that is optimized for storage, and another stream more suited for mobile viewers.
- **Four individual channels with full two-way audio support on each channel**
  Four individual channels with audio support on each channel provide a compact and cost-effective solution for large installations that require two-way audio.
- **Balanced microphone and line input support**
  The built-in phantom power source and adjustable input gain simplify the installation of balanced microphones.
- **Intelligent video capabilities**
  ONVIF open API for easy software integration ensures interoperability between IP-based physical security products regardless of brand.
- **Advanced security and network management**
  AXIS Q7414 offers the highest degree of security, including multiple user access levels, IP address filtering, HTTPS encrypted video streams that do not affect performance, and IEEE 802.1X to control network access. Network management features include Quality of Service for reservation of network capacity and support for IP protocol version 6 in addition to the standard IPv4. IPv6 is a requirement in many large installations.

Overview



LED indicators

Mic power	Blue	Steady - 12 V DC phantom power on. Microphone is connected
		Flashes - 12 V DC phantom power on. Microphone is disconnected
	Unlit	12 V DC phantom power off
Status	Green	Steady - normal operation
	Amber	Steady - during startup, reset to factory default, and restore
	Red	Slow flash - failed upgrade
		Steady - hardware error on the corresponding channel
	Green/red	Flashes - for identification purposes. For information go to *Identify*, on page 41
Power	Green	Normal operation
	Green/Amber	Flashes- for one or more channel upgrade

Accessing the video encoder blade

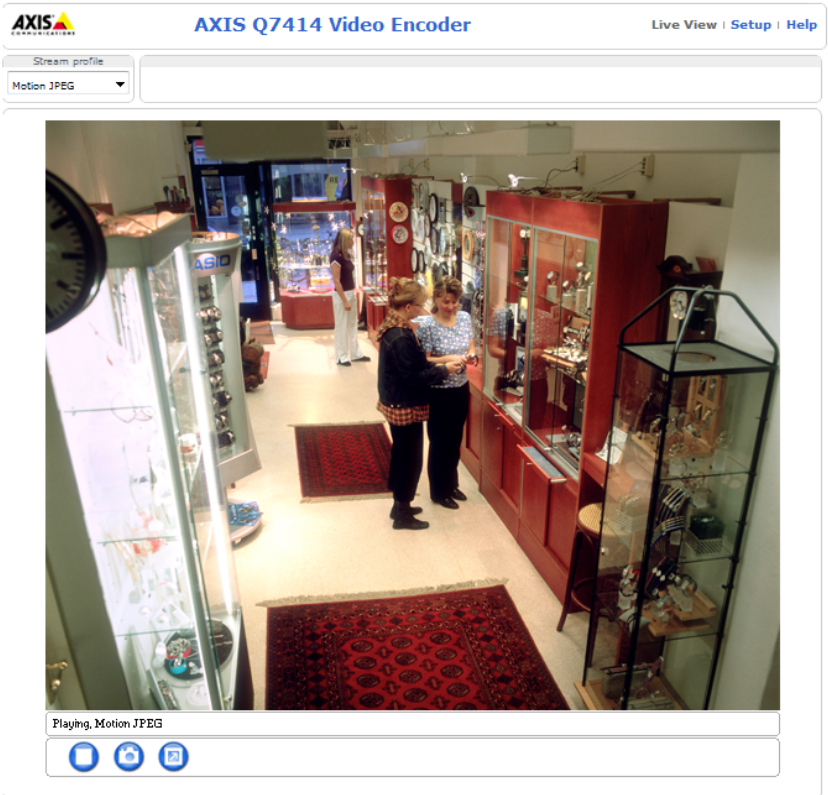
Refer to the installation guide supplied with your product in order to install AXIS Q7414 Video Encoder Blade.

AXIS Q7414 can be used with most standard operating systems and browsers. The recommended browsers are Microsoft Internet Explorer with Windows, Safari with Mac OS X and Firefox with other operating systems. See *Technical Specifications*, on page 53.

- To view streaming video in Microsoft Internet Explorer, set your browser to allow ActiveX controls and install AXIS Media Control (AMC) on your workstation
- QuickTime™ is also supported for viewing streaming H.264 streams
- If your computer restricts the use of additional software components, the video encoder can be configured to use a Java applet for viewing Motion JPEG
- The video encoder includes 4 decoder licenses for viewing H.264 video streams. H.264 is licensed technology. Installing additional unlicensed copies of the viewing client is prohibited. To purchase additional licenses, contact your Axis reseller
- Each AXIS Q7414 has 4 serial numbers

Access from a browser

1. Start a browser (Internet Explorer, Firefox).
2. Enter the IP address or host name of one of the video inputs in the **Location/Address** field of your browser. From a Macintosh computer (Mac OS X), click on the Bonjour tab and select one of AXIS Q7414 video inputs from the drop-down list.
3. If this is the first time you are accessing the AXIS Q7414, see *Setting the root password*, on page 7. Otherwise enter your user name and password, set by the administrator.
4. The video encoder's **Live View** page appears in your browser.



Note:

The layout of the **Live View** page may have been customized to specific requirements. Consequently, some of the examples and functions featured here may differ from those displayed on your own **Live View** page.

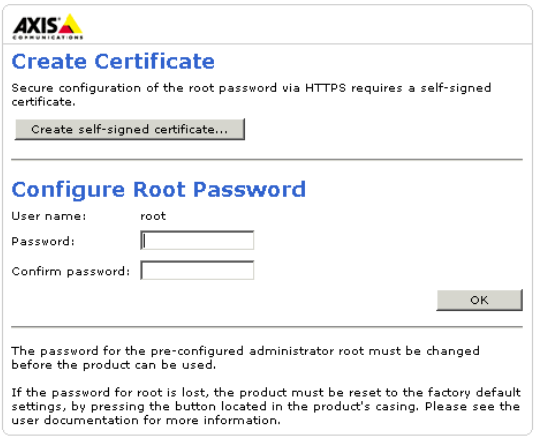
Setting the root password

1. When accessing the video encoder for the first time, the '**Configure Root Password**' dialog appears.

Note:

Before you enter your password at this point, you can secure configuration of the root password via HTTPS by creating a self-signed certificate. To do so, click the **Create self-signed certificate...** button in the **Create Certificate** window, and provide the requested information.

2. Enter a password and re-enter to confirm. Click **OK**. The **Enter Network Password** dialog appears.
3. Enter the password set in step 2, and click **OK**. If the password is lost, the video encoder must be reset to the factory default settings. See page 38.


AXIS
Create Certificate
Secure configuration of the root password via HTTPS requires a self-signed certificate.
Create self-signed certificate...
Configure Root Password
User name:
root
Password:
Confirm password:
OK
The password for the pre-configured administrator root must be changed before the product can be used.
If the password for root is lost, the product must be reset to the factory default settings, by pressing the button located in the product's casing. Please see the user documentation for more information.

Notes:

- The default administrator user name '**root**' is permanent and cannot be deleted.
- After setting the root password, click Yes to install AXIS Media Control (AMC), if prompted to do so. You will need administrator rights on the computer to do this.

Access from the Internet

Once connected, the video encoder is accessible on your local network (LAN). To access the video encoder from the Internet you must configure your broadband router to allow incoming data traffic to the video encoder. To do this, enable the NAT-traversal feature, which will attempt to automatically configure the router to allow access to the video encoder. You enable this feature from **Setup > System Options > Network > TCP/IP Advanced** in the web interface.

For more information, please see *NAT traversal (port mapping) for IPv4*, on page 37. See also AXIS Internet Dynamic DNS Service at www.axiscam.net For Technical notes on this and other topics, visit Axis Support web at www.axis.com/techsup

Setting the root password over a secure connection

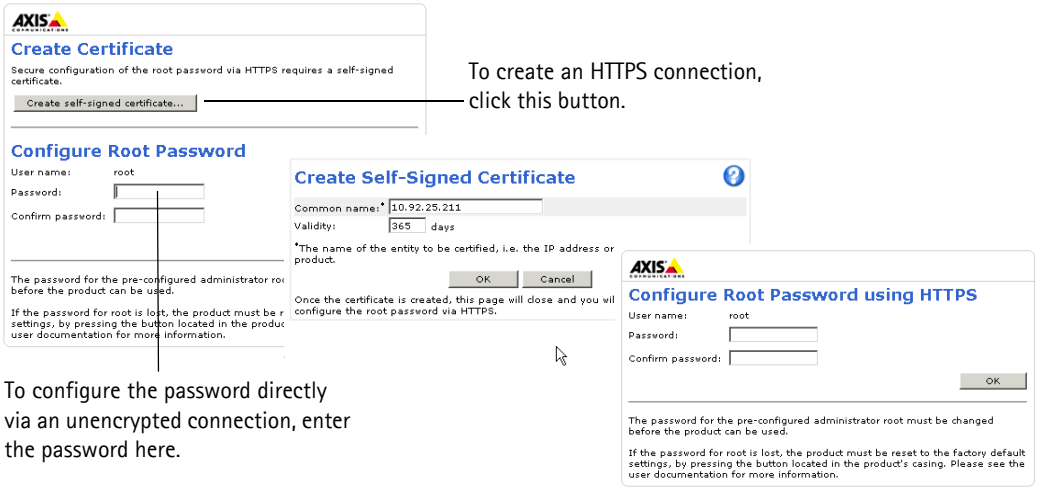
To gain access to the product, the password for the default administrator user root must be set. This is done in the 'Configure Root Password' dialog, which is displayed when the video encoder is accessed for the first time.

To prevent network eavesdropping when setting the root password, this can be done via an encrypted HTTPS connection, which requires an HTTPS certificate (see note below).

To set the password via a standard HTTP connection, enter it directly in the first dialog shown below.

To set the password via an encrypted HTTPS connection, follow these steps:

1. Click the **Create self-signed certificate** button.
2. Provide the requested information and click **OK**. The certificate is created and the password can now be set securely. All traffic to and from the video encoder is encrypted from this point on.
3. Enter a password and then re-enter it to confirm the spelling. Click **OK**. The password has now been configured.


Create Certificate
Secure configuration of the root password via HTTPS requires a self-signed certificate.
Create self-signed certificate...
To create an HTTPS connection, click this button.
Configure Root Password
User name: root
Password:
Confirm password:
The password for the pre-configured administrator ro
before the product can be used.
If the password for root is lost, the product must be r
settings, by pressing the button located in the produc
user documentation for more information.
Create Self-Signed Certificate
Common name: 10.92.25.211
Validity: 365 days
*The name of the entity to be certified, i.e. the IP address or product.
OK
Cancel
Once the certificate is created, this page will close and you wil
configure the root password via HTTPS.
Configure Root Password using HTTPS
User name: root
Password:
Confirm password:
OK
The password for the pre-configured administrator root must be changed before the product can be used.
If the password for root is lost, the product must be reset to the factory default settings, by pressing the button located in the product's casing. Please see the user documentation for more information.
To configure the password directly via an unencrypted connection, enter the password here.

Notes:

- HTTPS (Hypertext Transfer Protocol over SSL) is a protocol used to encrypt the traffic between web browsers and servers. The HTTPS certificate controls the encrypted exchange of information.
- The default administrator user **root** cannot be deleted.
- If the password for root is lost or forgotten, to log in as root the video encoder must be reset to the factory default settings. See page 44.

The Live View page

If your video encoder has been customized to meet specific requirements the buttons and other items described below may or may not be displayed on the Live View page. The following provides an overview of each available button:

General controls

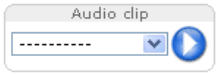
The Stream Profile drop-down list allows you to select a customized or pre-programmed stream profile on the Live View page. Stream profiles are configured under **Video & Audio > Stream Profiles**, see *Stream Profiles*, on page 16 for more information.

Pulse - Click this button to activate the output for a defined period of time, such as switching a light on for 20 seconds.

Active/Inactive - Click these buttons to manually start and stop a connected device - e.g. switch a light on/off.

The **Trigger buttons** can trigger an event directly from the **Live View** page. These are configured under **Setup > Live View Config > Layout**.

The **Snapshot** button saves a snapshot of the video image currently on display. Right-click on the video image to save it in JPEG format on your computer. This button is primarily intended for use when the AXIS Media Control viewer toolbar is not available.



Audio clip – Audio clips can be played manually from the **Live View** page. Select the audio clip from the drop-down list and click the **Play** button.

AXIS Media Control toolbar

The AXIS Media Control viewer toolbar is available in Internet Explorer only. See *AXIS Media Control (AMC)*, on page 12 for more information. AMC displays the following buttons:

The **Play** button connects to the Axis product and starts playing a media stream.

The **Stop** stops the video stream being played.

The **Snapshot** button takes a snapshot of the current image. The location where the image is saved can be specified in the AMC Control Panel.

Click the **View Full Screen** button and the video image will fill the entire screen. Press Esc (Escape) on the computer
keyboard to cancel full screen view.

The **Record** button is used to record the current video stream. The location where the recording is saved can be specified in the AMC Control Panel.

AMC Audio controls

AMC audio buttons control the speakers and microphone connected to the client computer. The buttons are only visible when audio is enabled.

Speaker buttons – Click to switch the sound on or off.

Microphone buttons - Click to switch the sound on or off.

Use the slider to control the **volume** on the speaker and microphone.

Half-duplex mode
The **Talk/Listen button** is used to switch between sending and receiving audio. The button can be configured from the Audio tab in the AMC Control panel:

- Push-To-Talk mode: Click and hold the button to talk/send, release the button to listen.
- Toggle mode: Click once to switch between talking and listening.

Simplex – Network Video Encoder speaker only mode
To send audio, the Talk and Microphone buttons must both be enabled. Click either button to stop audio transmission.

Pan/Tilt/Zoom controls

For information about pan, tilt and zoom controls, see *PTZ controls*, on page 25.

Video Streams

The video encoder provides several image and video stream formats. Your requirements and the properties of your network will determine the type you use.

The **Live View** page in the video encoder provides access to H.264 and Motion JPEG video streams, and to the list of available stream profiles. Other applications and clients can also access these video streams/images directly, without going via the **Live View** page.

How to stream H.264

This video compression standard makes good use of bandwidth, and can provide high quality video streams at less than 1 Mbit/s.

Deciding which combination of protocols and methods to use depends on your viewing requirements, and on the properties of your network. The available options in AMC are:

<table>
<tr><td>Unicast RTP</td><td>This unicast method (RTP over UDP) should be your first consideration for live unicast video, especially when it is important to always have an up-to-date video stream, even if some images are dropped.</td><td rowspan="3">Unicasting is used for video-on-demand broadcasting, so that there is no video traffic on the network until a client connects and requests the stream.

Note that there are a maximum of 20 simultaneous unicast connections.</td></tr>
<tr><td>RTP over RTSP</td><td>This unicast method (RTP tunneled over RTSP) is useful as it is relatively simple to configure firewalls to allow RTSP traffic.</td></tr>
<tr><td>RTP over RTSP over HTTP</td><td>This unicast method can be used to traverse firewalls. Firewalls are commonly configured to allow the HTTP protocol, thus allowing RTP to be tunneled.</td></tr>
<tr><td>Multicast RTP</td><td colspan="2">This method (RTP over UDP) should be used for live multicast video. The video stream is always up-to-date, even if some images are dropped.

Multicasting provides the most efficient usage of bandwidth when there are large numbers of clients viewing simultaneously. A multicast broadcast cannot however, pass a network router unless the router is configured to allow this. It is not possible to multicast over the Internet, for example.

Note also that all multicast viewers count as one unicast viewer in the maximum total of 10 simultaneous connections.</td></tr>
</table>

AMC negotiates with the video encoder to determine the transport protocol to use in the order listed above. This order can be changed and the options disabled, to suit specific requirements.

Important!

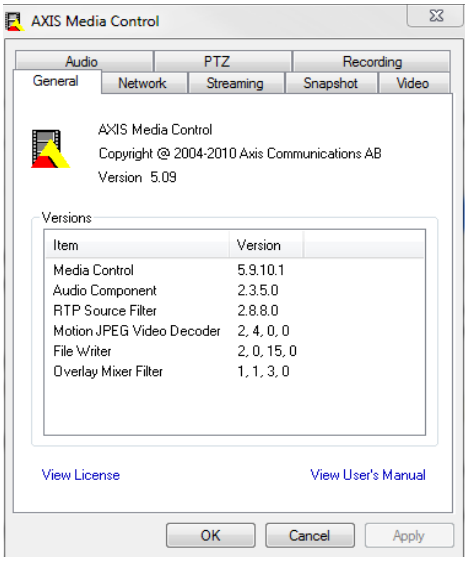
H.264 is licensed technology. The video encoder includes one viewing client license. Installing additional unlicensed copies of the viewing client is prohibited. To purchase additional licenses, contact your Axis reseller.

Motion JPEG

This format uses standard JPEG still images for the video stream. These images are then displayed and updated at a rate sufficient to create a stream that shows constantly updated motion.

The Motion JPEG stream uses considerable amounts of bandwidth, but provides excellent image quality and access to every image contained in the stream. The recommended method of accessing Motion JPEG live video from the video encoder is to use AXIS Media Control (AMC) in Microsoft Internet Explorer in Windows.

AXIS Media Control (AMC)



AXIS Media Control (AMC) in Microsoft Internet Explorer in Windows is the recommended method of accessing live video from the video encoder.

The AMC control panel can be used to configure various video and audio settings. See the User's Manual included in the tool for more information.

The AMC control panel is automatically installed on first use, after which it can be configured.
Open the AMC Control Panel from:

- Windows Control Panel (from the Start menu)
- Alternatively, right-click the video image in Internet Explorer and click **Settings** to access the AMC window.

Alternative methods of accessing the video stream

Video/images from the video encoder can also be accessed in the following ways:

- Motion JPEG server push (if supported by the client, Firefox, for example). This option maintains an open HTTP connection to the browser and sends data as and when required, for as long as required.
- Still JPEG images in a browser. Enter the path - http://<ip>/axis-cgi/jpg/image.cgi
- Windows Media Player. This requires AMC and the H.264 viewing client to be installed. The paths that can be used are listed below in the order of preference:
    - Unicast via RTP: axrtpu://<ip>/axis-media/media.amp
    - Unicast via RTSP: axrtsp://<ip>/axis-media/media.amp
    - Unicast via RTSP, tunneled via HTTP: axrtsphttp://<ip>/axis-media/media.amp
    - Multicast: axrtpm://<ip>/axis-media/media.amp

- To access the video stream from **QuickTime™** the following paths can be used:
    - rtsp://<ip>/axis-media/media.amp
    - rtsp://<ip>/axis-media/media.3gp

Notes:

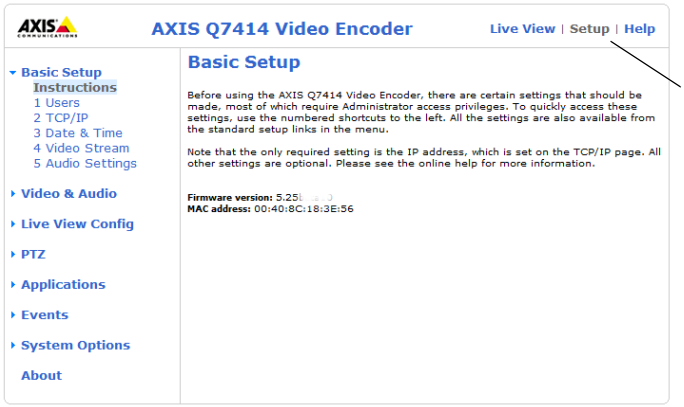
- The video encoder supports QuickTime 6.5.1 and later
- QuickTime adds latency to the video stream (up to 3 seconds)
- It may be possible to use other players to view the H.264 stream using the paths above, although Axis does not guarantee this
- <ip> = IP address
- <codec> = h264. The default codec is H.264.

Setup Tools

AXIS Q7414 can be configured by users with administrator or operator rights. Click **Setup** in the top right-hand corner of the **Live View** page to see the configuration menus.

- **Administrators** have unrestricted access to all settings.
- **Operators** have access to **Video & Audio**, **Live View Config**, **PTZ**, **Events** and **Recording List**.

See also the online help available by clicking on each Setup page.


AXIS Q7414 Video Encoder
Live View | Setup | Help
Basic Setup
Basic Setup
Instructions
1 Users
2 TCP/IP
3 Date & Time
4 Video Stream
5 Audio Settings
Video & Audio
Live View Config
PTZ
Applications
Events
System Options
About
Before using the AXIS Q7414 Video Encoder, there are certain settings that should be made, most of which require Administrator access privileges. To quickly access these settings, use the numbered shortcuts to the left. All the settings are also available from the standard setup links in the menu.
Note that the only required setting is the IP address, which is set on the TCP/IP page. All other settings are optional. Please see the online help for more information.
Firmware version:
MAC address: 00:40:8C:18:3E:56
Setup link

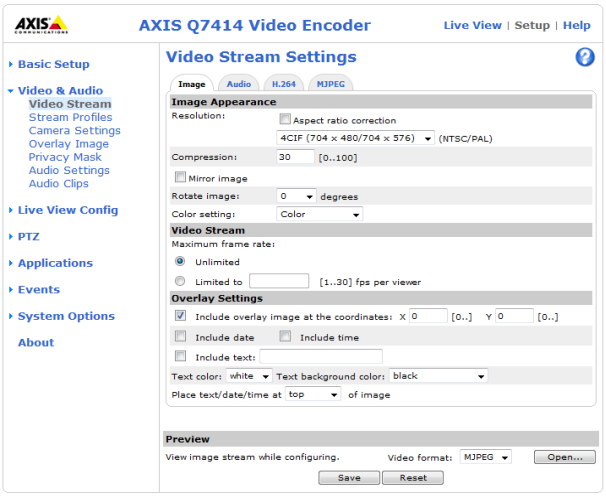
Basic Setup

Basic Setup provides shortcuts to the settings that should be made before using the network video encoder blade:

1. Users, see page 34.
2. TCP/IP, see page 36.
3. Date & Time, see page 35.
4. Video Stream, see page 14.
5. Audio Settings, see page 18.

Video & Audio

You can configure the video encoder by clicking **Setup** in the top right-hand corner of the **Live View** page. Click on this page to access the online help that explains the configuration menus.



Video Stream

The video stream settings are separated in tabs:

- Image
- H.264
- MJPEG

Image

Image Appearance

Use these settings to modify the image resolution and compression. Setting the compression level affects the image quality and the amount of bandwidth required, the lower the compression, the higher the image quality with higher bandwidth requirements. The image can also be mirrored (reversed) and rotated. See the online help files for more information.

Video Stream

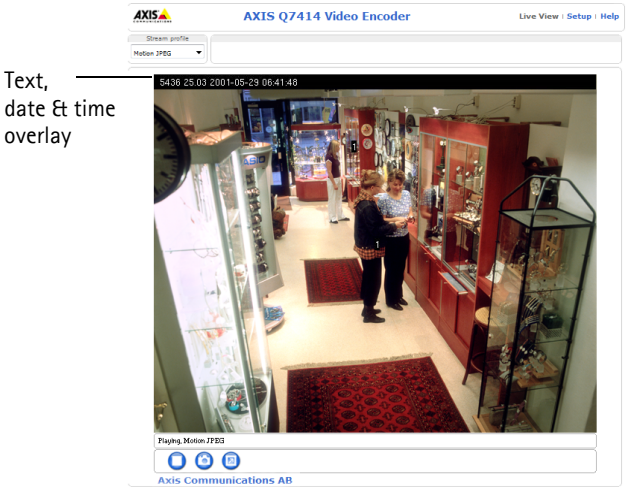
To avoid bandwidth problems on the network, the **frame rate** allowed to each viewer can be limited. Select the **Unlimited** radio button to allow the highest available frame rate or select the **Limited to**... radio button and enter a value (1-30) fps in the field.

Overlay Settings

Use these settings to include an text, date, and time as overlay. Click for information on available options.

Preview

For a preview of the image before saving, select video format and **Open**. When satisfied with the settings, click **Save**.



Audio

Enable Audio

Check the **Enable audio** box option to enable the audio functionality.

Note: Audio support must be also enabled under **System Options** > **Security**

The settings defined under **Audio Settings** are displayed under **Current Audio Settings**.

H.264

GOV Settings

The GOV structure describes the composition of the H.264 video stream which consists of 2 image forms, I-images and P-images. An I-image is a complete image, whereas a P-image is only the differences in the image as compared with the previous image.

The GOV length determines how many P-images are sent before the next complete I-image is sent.

Setting the GOV-length to a higher value saves considerably on bandwidth but if there is congestion on the network, there may be noticeable decay in the video quality. Setting the GOV-length to a lower value increases the video quality, in this case.

Note:

GOV length should not be higher than the set frame rate when using a pre-trigger buffer, *Pre-trigger and Post-trigger buffers,* on page 30.

Bit Rate Control

The bit rate type can be set as **Variable Bit Rate** (VBR) or **Constant Bit Rate** (CBR).

VBR adjusts the bit rate according to the image complexity, using more bandwidth for increased activity in the image, and less for lower activity in the monitored area.

CBR allows you to set a fixed **Target bit rate** that consumes a predictable amount of bandwidth. As the bit rate would usually need to increase for increased image activity, but in this case cannot, the frame rate and image quality are affected negatively. To partly compensate for this, it is possible to prioritize either the frame rate or the image quality whenever the bit rate needs to be increased. Not setting a priority means the frame rate and image quality are equally affected.

Note:

To determine a reasonable bit rate, go to **Setup > Video & Audio > Video Stream > Image**, check the **Include** checkbox and enter the code **#b** in the **Include text**: field. The current bit rate will display as a text overlay on the **Live View** page.

To view the image stream while configuring the GOV settings and Bit rate control, select **Open...** under **Preview.**

MJPEG

Sometimes the image size is large due to low light or complex scenery. Adjusting the maximum frame size helps to control the bandwidth and storage used by the Motion JPEG video stream in these situations. Defining the frame size as **Default** provides consistently good image quality at the expense of increased bandwidth and storage usage during low light. Limiting the frame size optimizes bandwidth and storage usage, but may give poor image quality. To prevent increased bandwidth and storage usage, the maximum frame size should be set to an optimal value.

Stream Profiles

There are 4 pre-programmed stream profiles available for quick set-up. These settings can be adjusted and new customized profiles can be created. Each profile has a descriptive name, describing its usage and/or purpose. The profiles can be accessed from the **Live View** page.

- To add a new stream profile, click **Add** to bring up the Stream Profile Settings panel.
- Enter a description for your profile.
- Choose the form of **Video encoding** you wish to use from the drop-down list:

  H.264 – Also known as MPEG-4 Part 10. This is the new generation compression standard for digital video. This function offers higher video resolution than Motion JPEG or MPEG-4 at the same bit rate and bandwidth, or the same quality video at a lower bit rate.

  Motion JPEG – Delivers a high quality video stream, from which individual images can be extracted and saved.
- **Copy** an existing stream profile to your system and rename the copy
- **Modify** an existing stream profile based on the light situation and motion to be captured by your video encoder.
- Highlight the stream profile you wish to remove, then click **Remove** to remove it from the list.

Camera Settings

This page provides access to the advanced image settings for AXIS Q7414.

Image Appearance

Color level - Select an appropriate level by entering a value in the range 0-100. Lower values mean less color saturation, while the value 100 gives maximum color saturation.

Brightness - The image brightness can be adjusted in the range 0-100, where a higher value produces a brighter image.

Contrast - Adjust the image's contrast by raising or lowering the value in this field.

Video Input

Offset Adjustments – Entering values in these fields changes the horizontal and vertical synchronization for the image. This can be used to eliminate any black border surrounding the image.

Be careful to only use low values, no more than 1-3, as higher values may put the image out of sync.

De-interlacing – is used to improve video stream image quality from analog devices. Select Adaptive Interpolation from the drop down list for best image quality. For improved image quality that is not as processor intensive, select Blending. If de-interlacing is not necessary select None.

Antialiasing minimizes distortion called aliasing, which appears as jagged lines in the image where there should be smooth lines and curves. Aliasing can happen when a high-resolution image is shown at a lower resolution, for example in a monitor.

If AXIS Q7414 Video Encoder is to be connected to the video source with other equipment and is not the last device in the chain, enable **Video Termination** by checking the box. Failure to do so can impair the image quality.

Overlay Image

To use an overlay image in AXIS Q7414, it must be selected from the drop-down list of available images. The overlay (for example a logo) is then displayed in the video image.

To use your own image, first upload it to AXIS Q7414 by entering the name of the file in the field provided, or by clicking the Browse button and locating it. Then click the Upload button.

Once your own image has been uploaded it will be available for selection from the drop-down list.

For more information please check the online help .

Privacy mask

Privacy masks are up to 3 configurable areas of solid color that allow concealment of parts of the image that are not to be viewable. Privacy masks cannot be bypassed via the AXIS VAPIX HTTP API.

Privacy Mask List

The Privacy Mask List shows all the masks that are currently configured in AXIS Q7414 and if they are enabled.

Add/Edit Mask

To define a new mask:

1. Click **Add** and place the box over the desired area to conceal.
2. Choose a color, black, white, gray or red for the box from the drop-down list Privacy mask color
3. Enter a descriptive name in the **Mask name** field.
4. Click **Save**.

To edit a privacy mask, select it and reshape, move or change color as needed.

Audio Settings

Audio Channels

The **Audio mode** that you select determines the type of audio transmission. The available options are:

Full duplex - Simultaneous two-way audio allowing you to transmit and receive audio (talk and listen) at the same time.

Note: There is no echo cancellation; if feedback loops appear, try moving the microphone or the speaker.

Half duplex - Non-simultaneous two-way audio. Half-duplex mode sends and receives audio in both directions, but only in one direction at a time.

Simplex – Network Video Encoder speaker only - The speaker connected to the network video encoder will play audio transmitted from any web client. This could be used, for example, to provide spoken instructions to a person seen in the live view image. This mode requires you to use the push-to-talk button.

Simplex – Network Video Encoder microphone only - transmits audio from the network video encoder to any web client. This can be used in remote monitoring, and web attractions, to provide live audio from a monitored situation.

Audio Input

Source - Select **Microphone** for an external microphone or **Line** for a Line in device, for example an audio mixer for multiple microphones, or a microphone with a built-in amplifier, **Status** shows if the source is connected or disconnected.

If the microphone is balanced select **Balanced**, look at the user documentation for your microphone and select the appropriate voltage or 12 V phantom voltage from the drop-down list. **Microphone power** should only be used with microphones that have no battery and not with a dynamic or battery powered microphone.

Input gain - Volume control of the audio input.

Level - The Level bar is a visual representation of the audio signal in dB.

- Green - The signal is at a good level.
- Yellow - The signal is becoming distorted.
- Red - The signal is distorted.

Encoding - Select the digital audio encoding format to use.

Sample rate - Select the required sample rate (the number of times per second the sound is sampled). Higher sample rate gives better audio quality, but requires more bandwidth.

Bit rate - Depending on the selected encoding, set the required bit rate. Higher bit rate gives better audio quality, but requires more bandwidth.

Audio Output

Output gain - Volume control of the line audio output. The output can be connected to an amplifier with speakers.

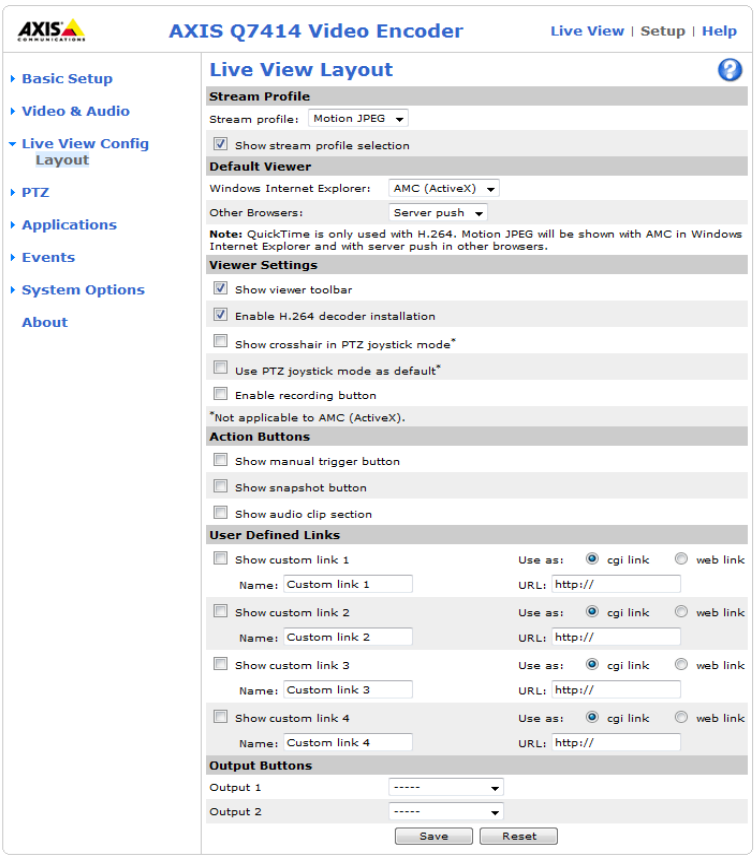
Click **Save** to save your settings, or click **Reset** to return to the previous settings.

Audio Clips

Audio clips can be played when an event occurs or manually from the **Live View** page. Audio clips are created either by recording sound using the encoder blade's microphone or by uploading a sound file to the video encoder blade. Audio clips that have been added to the network video encoder blade are listed in the **Audio Clip List** page. You can add new clips, play, download, modify and remove clips. Refer to the online help for further information.

Live View Config

Live View Layout



Stream Profile

From the **Stream Profile** drop-down list, select the stream profile that is to be used for the **Live View** page. Listed are the standard stream profiles as well as the ones created under **Video > Stream Profiles**. See the online help files on this page for more information.

Default Viewer

From the drop-down lists, select the default method for viewing video images for your browser. The video encoder attempts to show the video images in the selected video format and viewer. If this is not possible, the video encoder overrides the settings and selects the best available combination.

Browser	Viewer	Description
Windows Internet Explorer	AMC	Recommended viewer in Windows Internet Explorer (H.264/Motion JPEG).
	QuickTime	H.264 only.
	Java applet	A slower imaging alternative to AMC. Requires one of the following installed on the client: • JVM (J2SE) 1.4.2 or higher • JRE (J2SE) 5.0 or higher
	Still image	Displays still images only. Hit the Refresh button in your browser to view a new image.
Other browsers	Server Push	Recommended viewer for other browsers (Motion JPEG).
	QuickTime	H.264 only.
	Java applet	A slower imaging alternative to Server Push (Motion JPEG only).
	Still image	Displays still images only. Hit the Refresh button in your browser to view a new image.

Viewer Settings

Check the **Show viewer toolbar** box to display AXIS Media Control (AMC) or the QuickTime viewer toolbar under the video image in your browser.

The administrator can disable the installation of the **H.264 decoder** included with AMC. This is used to prevent the installation of unlicensed copies. Further decoder licenses can be purchased from your Axis dealer.

The **Show crosshair in PTZ joystick mode** shows up a cross that indicates the center of the image when viewing the video stream in PTZ joystick mode.

You can set the PTZ mode to joystick. Check the **Use PTZ joystick mode** as default option.

Check the **Enable recording button** to enable recording from the **Live View** page.

Action Buttons

The **Show manual trigger button** can be used to manually trigger and stop an event from the **Live View** page. See *Events*, on page 28.

Check the **Show snapshot button** to save a snapshot from the video stream. This button is mainly intended for use with browsers other than Internet Explorer, or when not using AXIS Media Control (AMC) to view the video stream. AMC for Internet Explorer provides its own snapshot button.

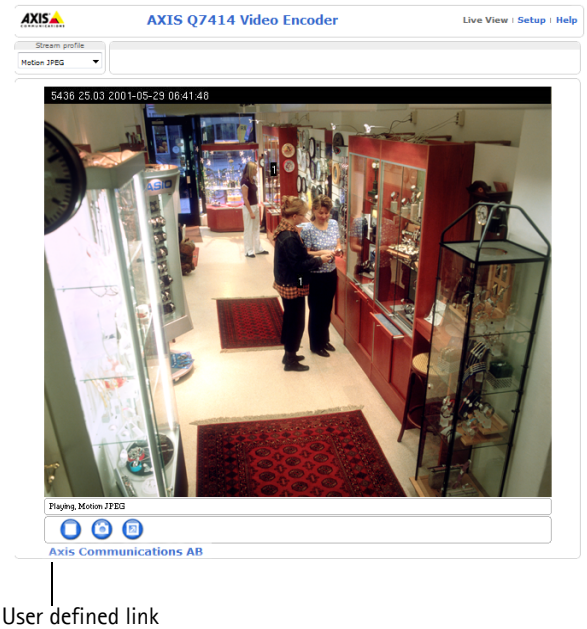
Show audio clip section - Enables the display of the Audio clip drop-down box and Play button in the Live View page allows users to play a pre-recorded audio clip from the video encoder blade. Go to **Video & Audio** > **Audio Clips** to work with the audio clips.

User Defined Links

User defined links can be CGI links or web links. Once configured, the link(s) appear on the **Live View** page.

To set up a web link, select the **Use as web link** radio button, enter a descriptive name and enter the URL in the provided field. Click **Save** and the link appears in the **Live View** page.

User defined CGI links can be used to issue HTTP API requests, such as PTZ commands.



User defined link

Example:

1. Check **Show Custom Link 1**.
2. Enter a descriptive name, such as "Start continuous pan".
3. Select the **Use as cgi link** radio button and enter the cgi link in the field:

http://192.168.0.125/axis-cgi/com/ptz.cgi?continuouspantiltmove=30,-30

4. Check **Show Custom** Link 2.
5. Enter a descriptive name, such as "Stop continuous pan".
6. Select the **Use as cgi link** radio button and enter the cgi link in the field:

http://192.168.0.125/axis-cgi/com/ptz.cgi?continuouspantiltmove=0,0

These links appear in the web interface and can be used to control the Axis video encoder.

For more information on the Axis HTTP API, see the Support/Developer pages on the Axis Web site at http://www.axis.com

See the online help files for more information.

Output Buttons

The output buttons are used to manually activate the output from the **Live View** page, for example, switching a light on and off. There are two options to activate the output:

- Pulse button - activates the output for a defined period
- Active/Inactive - displays two buttons (on/off)

Configure output ports under **System Options** > **Ports & Devices** > **I/O Ports**.

PTZ

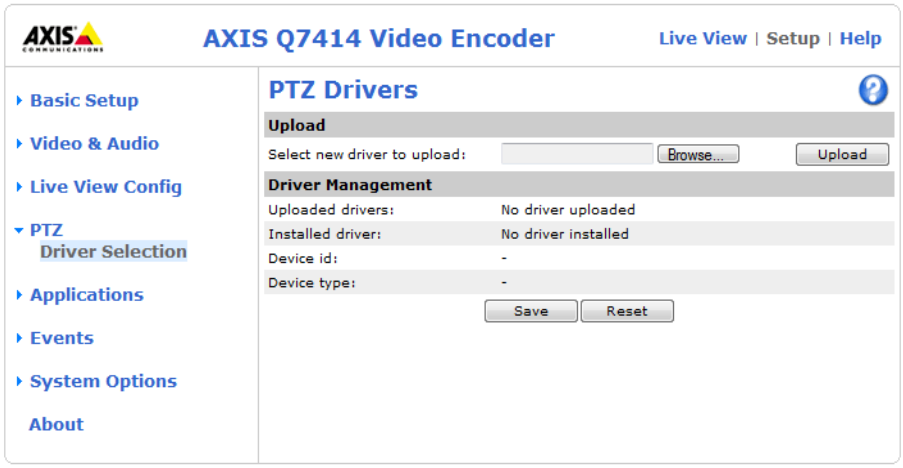
This Axis product supports several PTZ (Pan Tilt Zoom) devices. See www.axis.com for a complete list of supported devices, and to obtain the correct driver.

Installing a PTZ device is accomplished in two steps:

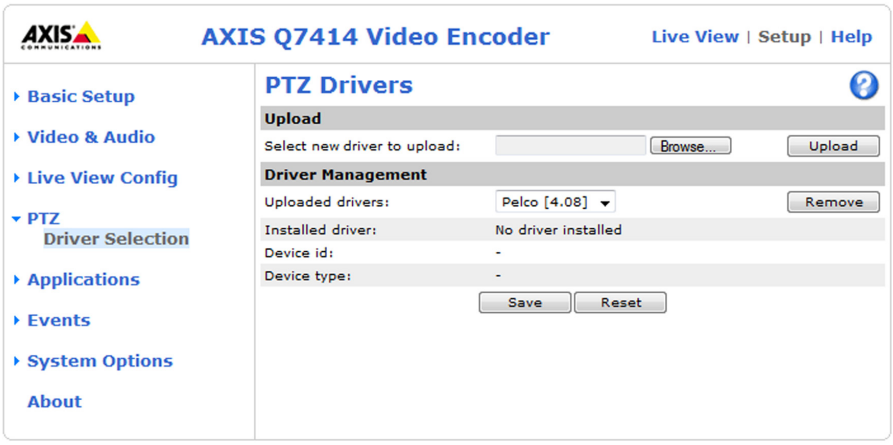
- Installing the PTZ driver
- Setting up the COM Port, on page 40

Installing the PTZ driver

1. Go to **PTZ** > **Driver Selection**.



2. Under **Upload**, click **Browse...** to find the driver. The driver has the file extension .ptz (for example, driver.ptz).
3. Click **Upload**. If the driver was successfully uploaded, it will be available under **Driver Management** > **Uploaded drivers**.



4. From the **Uploaded drivers** drop-down list, select the driver to install and click **Save**.
5. Enter the **Device ID**, select the **Device Type** from the drop down list and click **Save**.
6. Set up the COM Port for PTZ driver. See *COM Port*, on page 40 for instructions.

Notes:

- After a PTZ driver has been installed, **PTZ** > **Advanced** > **Device** will contain additional driver specific settings that can be configured for the PTZ device.
- Advanced users and application developers can also use the Axis Application Programming Interface and HTTP specification for generic control of PTZ devices using CGI commands or a TCP/IP client. Refer to the Axis website at www.axis.com for further information.

If AXIS Q7414 is mounted into an AXIS Q7900, one PTZ device can be connected to each of the four video channels.

If AXIS Q7414 is mounted into an AXIS 291, video input 1 on AXIS Q7414 supports several Pan Tilt Zoom (PTZ) devices. PTZ devices can also be used on video inputs 2-4, by creating an internal connection to them from video input 1. For further information see *Using PTZ on video inputs 2-4 (AXIS 291 1U Video Server Rack),* on page 26.

Uninstalling a PTZ driver

1. Go to **PTZ** > **Driver Selection**
2. Click **Uninstall**

For more information see the online help .

Preset positions

A preset position is a pre-defined camera view than can be used to quickly steer the camera view to a specific location.

From **Preset Position Setup**, use the Pan, Tilt and Zoom (PTZ) controls to steer the camera view to the required position. When satisfied with the position, enter a descriptive name. The position, iris and focus settings are then saved as a preset position.

The preset position can be assumed at any time, by selecting the preset's name from the Preset positions drop-down list. Preset positions can be selected in the **Live View** page; they can be selected as an action when an event is triggered as a part of a **Guard Tour**.

One position can be set as the Home position, which is readily accessible by clicking the box beside **Use current position as Home**. The position's name will then have (H) added to the end, for example, Office Entrance (H).

Guard tour

A guard tour moves between chosen **Preset Positions**, one-by-one, in a pre-determined order or at random, and for configurable time periods. The guard tour sequence will keep running, after the user has logged off or closed the browser.

Advanced

Device Settings - The device settings window is for driver specific settings, so the appearance of this window can vary depending on the driver installed. Options that can be configured include: **Driver Specific Settings for Video Source 1**, **Mechanical Limits for Moving Video Source 1**, **Light Control for Video Source 1**, and **Extended Driver Specific Settings for Video Source 1**.

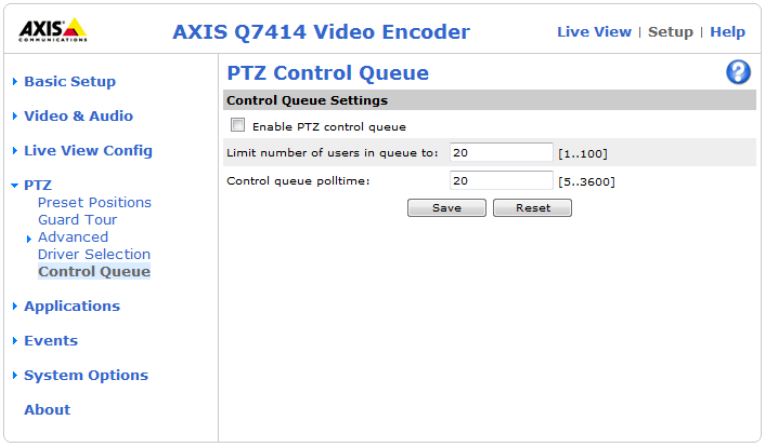
Control Settings - Here are the tools for creating and saving short command buttons that are located under the **Control panel**. These buttons provide direct access to various built-in auxiliary commands provided by the PTZ driver and are displayed in the PTZ Panel.

OSD Menu - If the PTZ driver supports an internal configuration menu, this can be accessed using the On-Screen Display (OSD). Configure the analog camera by opening and navigating through its internal menu in this display.

Other options appearing under the Advanced menu are dependant on the driver installed. See online help for information.

PTZ Control queue

Use the PTZ control queue window to enable and disable PTZ queueing. This window allows you to set up a queue for viewers wanting to access the video encoder blade, and limits the number of viewers and the length of time each viewer can access and control the PTZ unit. For more information on how to set up the control queue, see the online help .



Note also that a viewer who belongs to a group (see *Security*, on page 34) with a higher PTZ priority can go before other users in the queue and take control of the video encoder blade.

The order of priority for taking control of the queue is as follows:

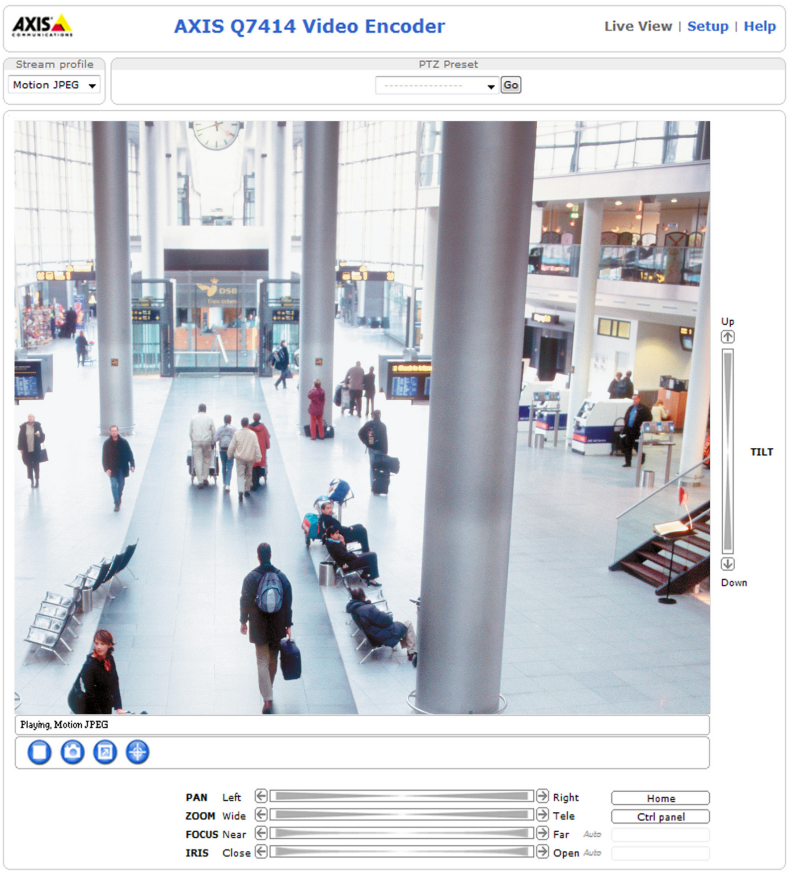
1. **Administrators** - An administrator takes over PTZ control regardless of who is first in queue. The administrator will be removed from the queue 60 seconds after their last PTZ control command.
2. **Event** - AXIS Q7414 can be set up to take control of the queue and move to a specific position for 20 seconds when triggered by an alarm. The event will immediately be placed first in the queue, except when an administrator is in control. For more information, see *Triggered Event*, on page 29.
3. **Operator** - Same as administrator, but with lower priority.
4. **Guard Tour** - A guard tour has PTZ control for an indefinite period of time. It may be overridden by an Operator, Event or administrator. Guard Tour will resume when higher priority groups leave the queue. For more information see *Guard tour*, on page 23.
5. **Viewer** - Multiple viewers must wait for their turn. The viewer has 60 seconds of PTZ control before control is passed to the next viewer in queue.

Note:

To identify the different users in the viewer group, cookies must be enabled on the client.

PTZ controls

If the video encoder blade has been appropriately configured, the **Live View** page displays the controls available for the installed Pan Tilt Zoom (PTZ) device. The administrator can enable/disable the controls for specified users.



The controls shown depend on the make and model of PTZ device. The most common controls are:

- the Pan bar - moves the camera view to the right and left
- the Tilt bar - tips the camera view up and down
- the Zoom bar - zooms the view in and out. Note that this is only available if the camera is fitted with a zoom lens
- the Focus bar - sets the focus at a new position
- the Iris bar - adjusts the brightness of the image

Clicking on the bars themselves or on the arrows at the end of the bars moves the camera view to a new position. The type of movement and the location of this new position depends on the type of PTZ driver.

When controlling the camera using a **relative** PTZ driver (see the bars in the illustration above) the new position is relative to the previous position, for example, left of, below, or above. Clicking the bar further from the center results in a larger movement.

In contrast, when using an **absolute** driver, each position on the bar (see right) represents a defined position in the device's range of movement, with the center of the bar representing the point midway between the two extremes of movement. The blue indicator shows the current position in the device's range of movement.

Clicking a position directly on the bar moves the camera view directly to the new position in one smooth movement. Click and hold down the arrows to change the position in a continuos movement.

Using CGI links to control PTZ devices

User-defined CGI links on the **Live View** page can be used to issue HTTP API requests, such as PTZ commands. These links are configured in the **Live View Layout** settings, see page 19.

PTZ control modes

The PTZ device can also be controlled using **click-in-image** movement, which has two different types of navigation - **Center** and **Joystick.**

Center mode means that when clicking in the image, the camera view centers on the absolute position that was clicked.

Joystick mode moves the camera view in the direction of the mouse pointer. By clicking and holding the mouse button down in the image, the PTZ device moves the camera in that direction, relative to the center of the image. The farther from the center the image is clicked, the greater the movement. The camera stops moving when the button is released.

Note:
There is also joystick support in AXIS Media Control (AMC).

Control Panel - The Panel View Settings window contains tools for creating and saving short command buttons that are located under the Control panel. These buttons provide direct access to various built-in auxiliary commands provided by the PTZ driver and are displayed in the PTZ Panel.

Using PTZ on video inputs 2-4 (AXIS 291 1U Video Server Rack)

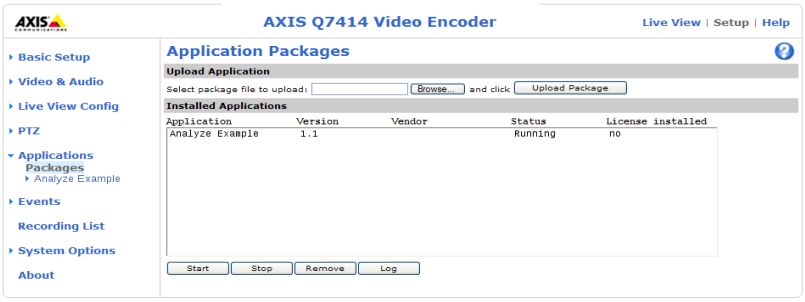
Although AXIS Q7414 only supports an RS-485 port on video input 1 if it is mounted into an AXIS 291 1U Video Server Rack, it is still possible to use PTZ devices on video inputs 2-4 by creating virtual connections to these inputs from video 1 (See *Pin assignments for the I/O Connector of AXIS 291 1U Video Server Rack,* on page 46). To do this, follow these steps:

1. Configure PTZ on video input 1 and install the required PTZ driver. This step is always required, whichever video input you intend to use for PTZ, and is described in detail in *Installing the PTZ driver.* Refer also to *Pin assignments for the I/O Connector of AXIS 291 1U Video Server Rack,* on page 46.
2. Repeat this procedure and install the same device driver on the other video inputs you wish to use PTZ on.
3. Enter the same Authentication key as configured for video input 1. This will prevent unauthorized access to the RS-485 port.

PTZ devices on inputs 2-4 are configured in the same way as a device on video input 1.

Applications

Application Packages



The Applications feature allows you to upload third party applications for use on this device. Listed under **Applications** > **Packages** are the applications that have already been installed. Click on the name to view the menu options - **Settings**, **License** and **About**.

Settings - This is dependent on the application.

License - Once uploaded some applications need a license to run, and a license code is required for the uploaded application. If the video encoder is connected to the Internet, **Automatic Installation** appears in the web page. If there is no Internet connection, go to www.axis.com to acquire a License key file. You will need a license code and the device's serial number to receive a license key.

About - Details support for this application. To upload an application, browse to the package and click **Upload Package**.

Installed Applications - A list of installed applications with information about the version, and the vendor; the status of the application (running or not running), and information about the license (if installed).

Start/Stop - Start or stop the application.

Remove - To delete an application, select it and click **Remove**.

Log - To generate a log of the application happenings, select an application and click **Log**. This log is helpful when requesting support from the application's vendor.

Events

An **event** or **Event Type** in the video encoder blade triggers actions when activated. An event type is a set of parameters that defines the actions. A common event type is an alarm that causes the video encoder to upload images. Many event types use an **Event Server**, to receive uploaded images.

This section describes how to configure AXIS Q7414 to perform certain actions when events occur.

Definitions

Event type	A set of parameters describing how and when the video encoder performs certain actions
Triggered Event – see page 29	An event that is started by some sort of signal, for example, an external device such as a door switch, motion detection, or system event.
Scheduled Event – see page 30	Pre-programmed time period(s) during which an event will run.
Action	This occurs when the event runs, for example, uploading of images to an FTP server, or email notification.

Event Servers

Event Servers are used to receive uploaded image files and/or notification messages. To set up Event Server connections in the video encoder, go to **Setup > Events > Event Servers** and enter the required information for the required server type.

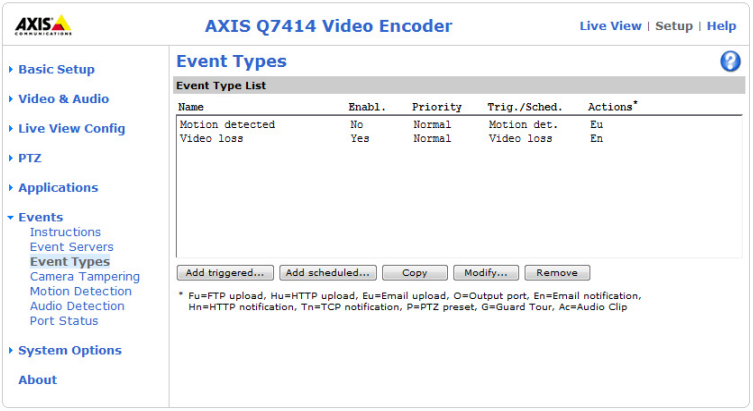
Server type	Purpose	Information required
FTP Server	• Receives uploaded images	• Descriptive name of your choice • Network address (IP address or host name) • User Name and Password
HTTP Server	• Receives notification messages • Receives uploaded images	• Descriptive name of your choice • URL (IP address or host name) • User Name and Password
TCP Server	• Receives notification messages	• Descriptive name of your choice • Network address (IP address or host name) • Port number

For details on each setting, see the online help available from each web page.

When the setup is complete, the connection can be tested by clicking the **Test** button (the connection test takes approximately 10 seconds).

Event Types

An **Event Type** describes how and when AXIS Q7414 performs certain actions.



Example: If somebody passes in front of a camera and an event has been configured to detect and respond to motion, the video encoder blade can record and saves images to an FTP server, and can send a notification email to an email address. Images can be sent as email attachments.

Triggered Event

A triggered event could be activated by:

- a push button connected to the video encoder blade's input port
- a manually activated action, such as from an action button in the web interface
- detected movement in a configured motion detection window
- application trigger
- on restart (reboot), after power loss
- camera tampering
- video loss

How to set up a triggered event

The following example describes how to set up the video encoder to upload images when the main door is opened.

1. Click **Add triggered...** on the **Event Types** page. The **Triggered Event Type Setup** page appears.
2. Enter a descriptive **Name** for the event, such as Main door open.
3. Set the **Priority** - High, Normal or Low (see the online help).
4. Set the **Respond to Trigger...** parameters to define when the event is active, for example, after office hours.
5. Select the trigger alternative from the **Triggered by...** drop-down list. For example, select Input ports, for a sensor connected to the door.
6. Set the **When Triggered...** parameters, that is, define what the video encoder will do if the main door is opened - upload images to an FTP server or send an e-mail notification.
7. Click **OK** to save the event in the Event Types list.

Please see the online help for descriptions of each available option.

Note:

Up to 10 event types can be configured in each channel of the video encoder blade, and up to four of these can be configured to upload images. File names can be formatted according to specific requirements. See File Naming & Date/Time Formats online help.

Pre-trigger and Post-trigger buffers

This function is very useful when checking to see what happened immediately before and/or after a trigger, for example, 30 seconds before and/or after a door was opened. Check the **Save stream** checkbox under **Event Types > Add Triggered... > When Triggered...** to view the options. All uploaded images are JPEG images.

Include pre-trigger buffer - images stored internally in the server from the time immediately preceding the trigger. Check the box to enable the pre-trigger buffer, enter the desired length of time and specify the required image frequency.

Include post-trigger buffer - contains images from the time immediately after the trigger. Configure as for pre-trigger.

Notes

- Pre-trigger and Post-trigger buffers will be lost if the connection to the event server fails.
- The maximum length of the pre-/post-buffer depends on the video image size and selected frame rate.
- If the pre- or post-buffer is too large for the video encoder's internal memory, the frame rate is reduced and individual images may be missing. If this occurs, an entry is created in the unit's log file.

Continue image upload (unbuffered) - enables the upload of video images for a fixed length of time. Specify the length of time for the uploaded recording, in seconds, minutes or hours, or for as long as the trigger is active. Finally, set the desired image frequency to the maximum (the maximum available) or to a specified frame rate. The frame rate will be the best possible, but might not be as high as specified, especially if uploading via a slow connection.

Scheduled Event

A **Scheduled event** can be activated at preset times, in a repeating pattern on selected weekdays.

Configuration example:

1. Click **Add scheduled...** on the **Event Types** page.
2. Enter a descriptive **Name** for the event, such as Scheduled e-mail upload.
3. Set the **Priority** (High, Normal or Low).
4. Set the **Activation Time** parameters (24h clock) for the event - start on Sundays at 13.00 with a duration of 12 hours.
5. Set the **When Activated...** parameters, (what the video encoder would do at the specified time) for example, send uploaded images to an e-mail address.
6. Click **OK** to save the Event in the Event Types list.

See the online help for descriptions of each available option.

Camera tampering

The camera tampering application generates an alarm whenever the camera is repositioned, or when the lens is covered, sprayed, or severely defocused.

The **Minimum duration** parameter sets the minimum tampering period, that is an alarm will not be triggered until this period has elapsed, even if the tampering conditions are otherwise met. This can help prevent false alarms for known conditions that affect the image.

If the camera lens is sprayed or covered so that the camera live view becomes dark, it will not be possible to distinguish this situation from other situations where the same effect is seen, such as when lighting conditions change.

When the **Alarm for dark images** parameter is enabled, alarms are generated for all cases where the lights are either dimmed or turned off, or if the lens is sprayed, covered, or rendered severely out of focus. If not enabled, no alarm will be sent.

After you define these settings, click **Save**.

To send an alarm if the camera has been tampered with, go to **Events** > **Event types** > **Add triggered**. Select **Camera tampering** from the **Triggered by...** drop-down list. See the online help for more instructions.

Motion Detection

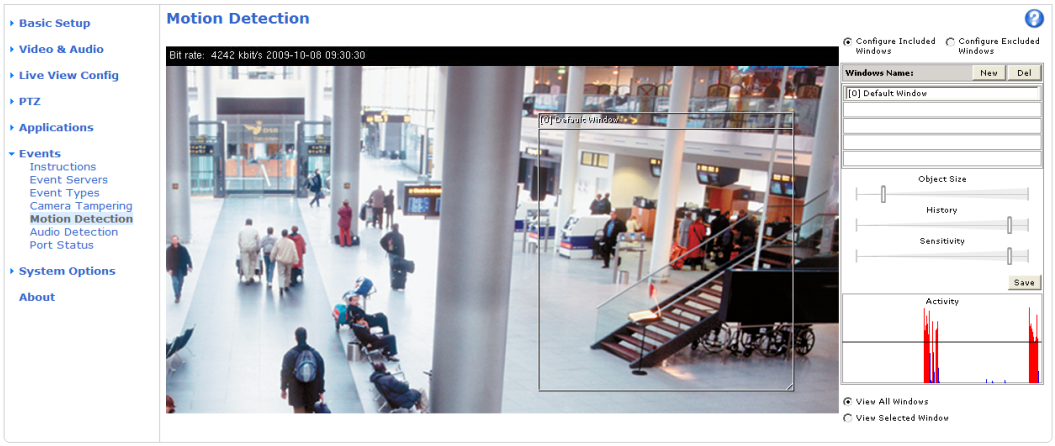
Motion detection is used to generate an alarm whenever movement occurs (or stops) in the video image. A total of 10 Include and/or Exclude windows can be configured.

- **Included** windows target specific areas within the whole video image
- **Excluded** windows define areas within an Include window that should be ignored (areas outside Include windows are automatically ignored)

Once configured, the motion detection windows appear in the list of available triggers, for triggering events. See *How to set up a triggered event*, on page 29.

Note:

Using the motion detection feature may decrease the video encoder's overall performance.



Configuring Motion Detection

1. Click **Motion Detection** in the **Events** menu.
2. Click the **Add Window** button.
3. Select the **Include** or **Exclude** option to define an Include or Exclude window, and enter a descriptive name in the field below.
4. Adjust the size (drag the bottom right-hand corner) and position (click on the text at the top and drag to the desired position) of the active window.
5. Adjust the **Object Size**, **History** and **Sensitivity** profile sliders (see table below for details). Any detected motion within an active window is then indicated by red peaks in the **Activity** window (the active window has a red frame).
6. Click **Save**.

> To exclude parts of the Include window, select the **Exclude** option and position the Exclude window as required, within the Include window.

See the online help for descriptions of each available option.

	Object Size	History	Sensitivity
High level	Only very large objects trigger motion detection	An object that appears in the region will trigger the motion detection for a long period	Ordinary colored objects on ordinary backgrounds will trigger the motion detection
Low level	Even very small objects trigger motion detection	An object that appears in the region will trigger motion detection for only a very short period	Only very bright objects on a dark background trigger motion detection
Default value	Low	High	High

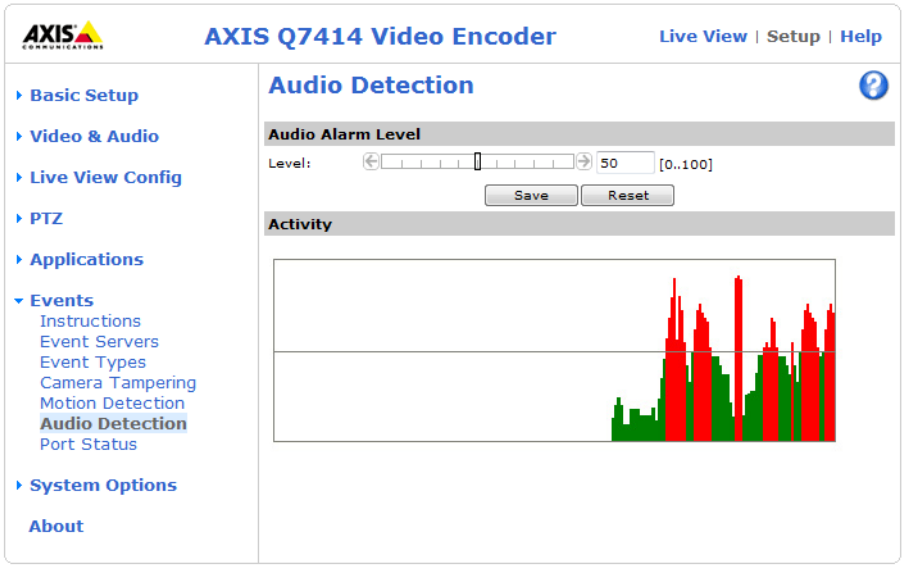
Examples:

- Avoid triggering on small objects in the video image by setting the **object size** level to high.
- To reduce the number of triggers if there is a lot of movement during a short period of time, select a high **history** level.
- To only detect flashing light, select low **sensitivity**. In other cases, a high **sensitivity** level is recommended.

Audio Detection

Event types in AXIS Q7414 can be set to use Audio Alarm Level as a trigger. Each individual event type can be configured to trigger if the sound level rises above, falls below or passes the set value. The alarm level can be set in the range 0-100, where 0 is the most sensitive and 100 the least sensitive.

When setting the alarm level use the activity indicator as a guide. Place the level so that sound that should be triggered on is on the correct side of the bar.



Port Status

Under **Events** > **Port Status** there is a list showing the status for AXIS Q7414's input and output. This is for the benefit of **Operators** who have no access to the System Options section.

Example: If the Normal state for a push button connected to an input is set to **Open circuit** – as long as the button is not pushed, the state is **inactive**. If the button is pushed, the state of the input changes to **active**.

System Options

Security

Users

User access control is enabled by default. An administrator can set up other users, by giving these user names and passwords. It is also possible to allow anonymous viewer login, which means that anybody may access the **Live View** page, as described below:

The **user list** displays the authorized users and user groups (levels):

Viewer	Provides the lowest level of access, which only allows access to the **Live View** page.
Operator	An operator can view the **Live View** page, create and modify events, and adjust certain other settings. Operators have no access to System Options.
Administrator	An administrator has unrestricted access to the Setup tools and can determine the registration of all other users.

HTTP/RTSP Password Settings - Select the type of password to allow. You may need to allow unencrypted passwords if there are viewing clients that do not support encryption, or if you recently upgraded the firmware and the existing clients do support encryption, but need to log in again, and be configured to use this functionality.

User Settings

- Check the relevant box to enable **anonymous** viewer login - allows any viewer direct access to the **Live View** page.
- Check the box to enable anonymous PTZ control login to allow anonymous users to join a queue for gaining control of the PTZ controls.
- Before using AXIS Q7414, there are certain settings that should be made, most of which require Administrator access privileges. These settings can be quickly accessed through Basic Setup in the menu. All settings are also available from the standard menu. Basic Setup is enabled by default but can be disabled and removed from the menu, by deselecting the Enable **Basic Setup** box option.

IP Address Filter

Enable IP Address Filtering to allow or deny access to the video encoders**.** Once enabled, the IP addresses in the list are allowed or denied access according to the choice made in the drop-down list **Allow/Deny the following IP addresses.**

The administrator can add up to 256 IP address entries to the list (a single entry can contain multiple IP addresses). The users from these IP addresses need to be specified in the user list with the appropriate access rights. This is done from **Setup > System Options > Security > Users**.

HTTPS

The video encoders support encrypted browsing using HTTPS.

A **self-signed certificate** can be used until a Certificate Authority-issued certificate has been obtained. Click the **Create self-signed Certificate** button to install a self-signed certificate. Although self-signed certificates are free and offer some protection, true security is only implemented after the installation of a signed certificate issued by a certificate authority.

A signed certificate can be obtained from an issuing Certificate Authority by clicking the **Create Certificate Request** button. When the signed certificate is returned, click the **Install signed certificate** button to import the certificate. The properties of any certificate request currently resident in the video encoder or installed can also be viewed by clicking the **Properties...** button. The HTTPS Connection Policy must also be set in the drop-down lists to enable HTTPS in the video encoder.

For more information, please refer to the online help.

IEEE 802.1X

IEEE 802.1X is a standard for port-based Network Admission Control providing secure authentication of wired and wireless network devices. IEEE 802.1X is based on EAP (Extensible Authentication Protocol).

To access a network protected by IEEE 802.1X, devices must authenticate themselves. The authentication is performed by a third-party entity called an authentication server, typically a RADIUS server, examples of which are FreeRADIUS and Microsoft Internet Authentication Service.

In Axis implementation, the network device and the authentication server authenticate themselves with the help of digital certificates using EAP-TLS (Extensible Authentication Protocol - Transport Layer Security). The certificates are provided by an Certification Authority (CA). You need:

- a CA certificate to validate the identity of the authentication server
- a CA-signed client certificate and a private key to authenticate the network device.

To allow the network device to access a network protected by IEEE 802.1X:

1. Obtain a CA certificate, a client certificate and a client private key (contact your network administrator).
2. Go to **Setup > System Options > Security > IEEE 802.1X** and upload the CA certificate, the client certificate and the client private key.
3. Under **Settings**, select the EAPOL version, provide your EAP identity and private key password.
4. Check the box to enable IEEE 802.1X and click **Save**.

Certificates

CA Certificate	The CA certificate is used to validate the identity of the authentication server. Enter the path to the certificate directly, or locate the file using the Browse button. Then click Upload. To remove a certificate, click Remove.
Client Certificate	The client certificate and private key are used to authenticate the network device. They can be uploaded as separate files or in one combined file (e.g. a PFX file or a PEM file). Use the Client Private Key field if uploading one combined file. For each file, enter the path to the file, or locate the file using the Browse button. Then click Upload. To remove a file, click Remove.
Client private key	
Settings	
EAPOL Version	Select the EAPOL version (1 or 2) as used in your network switch.
EAP Identity	Enter the user identity (maximum 16 characters) associated with your certificate.
Private Key Password	Enter the password (maximum 16 characters) for the private key.
Enable IEEE 802.1X	Check the box to enable the IEEE 802.1X protocol.

Audio Support

Enable audio support - This option allows clients to retrieve audio streams from the video encoder. See also *Audio Settings*, on page 18 for information on how to configure the audio settings.

Note:

This parameter will enable/disable audio globally in the video encoder, even for configured events and profiles with audio.

Date & Time

Current Server Time – displays the current date and time (24h clock). The time can be displayed in 12h clock format in the overlay (see below).

New Server Time – select your time zone from the drop-down list. If you want the server clock to automatically adjust for daylight savings time, select the **Automatically adjust for daylight saving time changes**.

From the **Time Mode** section, select the preferred method to use for setting the time:

- **Synchronize with computer time** - sets the time from the clock on your computer.
- **Synchronize with NTP Server** - the video encoder will obtain the time from an NTP server on a regular basis.
- **Set manually** - this option allows you to manually set the time and date.

Note:

If using a host name for the NTP server, a DNS server must be configured under **TCP/IP** settings. See **Network > Basic TCP/IP Settings** below.

Date & Time Format Used in Images - specify the formats for the date and time (12h or 24h) displayed in the video streams.

Use the predefined formats or use your own custom date and time formats. See **Advanced File Naming & Date/Time Formats** in the online help for information on how to create your own date and time formats.

Network

Basic TCP/IP Settings

AXIS Q7414 supports both IP version 4 and IP version 6. Both versions may be enabled simultaneously, and at least one version must always be enabled. When using IPv4, the IP address for the video encoder can be set automatically via DHCP, or a static IP address can be set manually. If IPv6 is enabled, the video encoders receive an IP address according to the configuration in the network router. There is also the option of using the AXIS Internet Dynamic DNS Service. For more information on setting the IP address, please see the online help .

Network Settings – Click the **View** button for an overview of the IP configuration of the video encoder.

IPv4 Address Configuration – Check this box to enable IPv4.

Obtain IP address via DHCP – Dynamic Host Configuration Protocol (DHCP) is a protocol that lets network administrators centrally manage and automate the assignment of IP addresses on a network. DHCP is enabled by default. Although a DHCP server is mostly used to set an IP address dynamically, it is also possible to use it to set a static, known IP address for a particular MAC address.

Note:

DHCP should only be enabled if using dynamic IP address notification (see below), or if your DHCP server can update a DNS server, which then allows you to access AXIS Q7414 by name (host name). If DHCP is enabled and you cannot access the unit, you may have to reset it to the factory default settings and then perform the installation again.

Use the following IP address – To use a static IP address for a channel of AXIS Q7414, check the radio button and then make the following settings:

- IP address - Specify a unique IP address. (To check if the IP address you intend to use is available or not, click the Test button)
- Subnet mask - Specify the mask for the subnet AXIS Q7414 is located on
- Default router - Specify the IP address of the default router (gateway) used for connecting devices attached to different networks and network segments.

IPv6 Address Configuration – Check the box to enable IPv6. Other settings for IPv6 are configured in the network router.

Services – Enable ARP/Ping setting of IP address - The IP address can be set using the ARP/Ping method, which associates the unit's MAC address with an IP address. Check this box to enable the service. Leave disabled to prevent unintentional resetting of the IP address.

Notes:

- The ARP/Ping service is automatically disabled two minutes after the unit is started, or as soon as an IP address is set.
- Pinging the unit is still possible when this service is disabled.

Enable AVHS – AXIS Video Hosting System (AVHS) in conjunction with an AVHS service provides easy and secure Internet access to live and recorded video accessible from any location. For more information and help to find a local AVHS Service Provider please go to www.axis.com. If AVHS is not to be used this option can be disabled.

One-click enabled - Press the video encoder blade's control button (see *Overview*, on page 5) to connect to an AVHS service over the Internet. Once registered the video encoder blade stays connected to the AVHS service. If the video encoder blade is not registered within 24 hours after the button is pressed, the video encoder blade will disconnect from the AVHS service.

Always - The video encoder blade will constantly attempt to connect to the AVHS service over the Internet. Once registered the video encoder blade will stay connected to the service. This option can be used when the video encoder blade is already installed and it is not convenient to use the one-click installation.

AXIS Internet Dynamic DNS Service - Use the AXIS Internet Dynamic DNS service to assign a host name for easy access to your video encoder blade (requires Internet access).

Click **Settings...** to register the video encoder blade with the Axis Internet Dynamic DNS service, or to modify the existing settings (requires access to the Internet). The domain name currently registered at the Axis Internet Dynamic DNS service for your product can at any time be removed.

For more information, please refer to the online help .

Advanced TCP/IP Settings

DNS Configuration – DNS (Domain Name Service) provides the translation of host names to IP addresses on your network.

Obtain DNS server address via DHCP - automatically use the DNS server settings provided by the DHCP server. Click the **View** button to see the current settings.

Use the following DNS server address - enter the desired DNS server by specifying the following:

- **Domain name** - enter the domain(s) to search for the host name used by the video encoders. Multiple domains can be separated by semicolons (;). The host name is always the first part of a Fully Qualified Domain Name, for example, **myserver** is the host name in the Fully Qualified Domain Name **myserver.mycompany.com** where mycompany.com is the Domain name.
- **DNS servers** - enter the IP addresses of the primary, and secondary DNS servers.

Note:
A secondary DNS server is not mandatory.

NTP Configuration – Obtain NTP server address via DHCP - select this radio button option to automatically look up and use the NTP server settings as provided by DHCP. Click the **View** button to see the current settings.

Use the following NTP server address – to create manual settings, check this radio button and enter the host name or IP address of the NTP server.

Host Name Configuration – The video encoders can be accessed using a host name, instead of an IP address. The host name is usually the same as the assigned DNS Name.

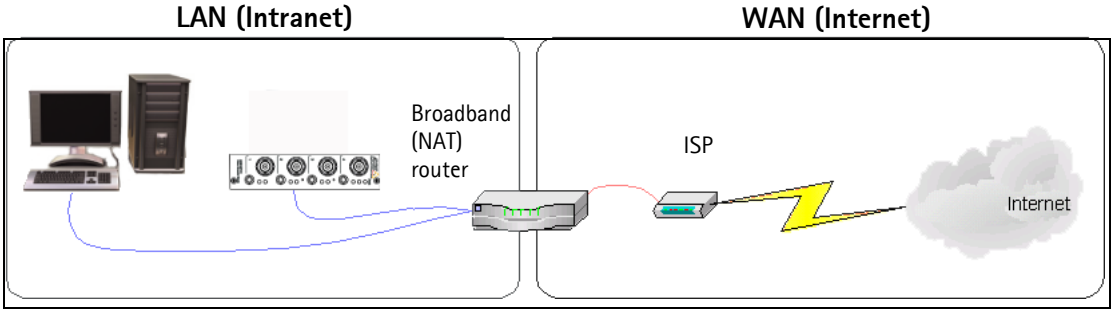
For more information, please see *Security,* on page 34.

Link-Local IPv4 Address – This is enabled by default and assigns the video encoders an additional IP address for use with UPnP™. The video encoder blade can have both a Link-Local IP and a static/DHCP-supplied IP address at the same time - these will not affect each other.

HTTP and HTTPS – The default HTTP/HTTPS port numbers (80 and 443 respectively) can be changed to any port within the range 1024-65535. This is useful for simple security port mapping, for example.

NAT traversal (port mapping) for IPv4 – A broadband router allows devices on a private network (LAN) to share a single connection to the Internet. This is done by forwarding network traffic from the private network to the "outside", that is, the Internet. Security on the private network (LAN) is increased since most broadband routers are pre-configured to stop attempts to access the private network (LAN) from the public network/Internet.

Use **NAT traversal** when your video encoder is located on an intranet (LAN) and you wish to make it available from the other (WAN) side of a NAT router. With NAT traversal properly configured, all HTTP traffic to an external HTTP port in the NAT router is forwarded to the video encoder.



Notes:

- For NAT traversal to work, this must be supported by the broadband router.
- The broadband router has many different names: "NAT router", "Network router", Internet Gateway", "Broadband sharing device" or "Home firewall" but the essential purpose of the device is the same.

Enable/Disable - when enabled, the video encoder attempts to configure port mapping in a NAT router on your network, using UPnP™. Note that UPnP™ must be enabled in the video encoder (see **System Options > Network > UPnP**).

Use manually selected NAT router - select this option to manually select a NAT router and enter the IP address for the router in the field provided.

If a router is not manually specified, the video encoder blade automatically searches for NAT routers on your network. If more than one router is found, the default router is selected.

Alternative HTTP port - select this option to manually define an external HTTP port. Enter the port number in the field provided. If no port is entered here a port number is automatically selected when NAT traversal is enabled.

Notes:

- An alternative HTTP port can be used/be active even if NAT traversal is disabled. This is useful if your NAT router does not support UPnP and you need to manually configure port forwarding in the NAT router.
- If you attempt to manually enter a port that is already in use, another available port is automatically selected.
- When the port is selected automatically it is displayed in this field. To change this enter a new port number and click Save.

FTP – The FTP server running in the video encoders enables the upload of new firmware, and user applications. Check the box to enable the service.

RTSP – The RTSP protocol allows a connecting client to start an H.264 stream. Check the box to enable the server and enter the RTSP port number to use. The default setting is 554. Note that H.264 video streams will not be available if this service is not enabled.

SOCKS

SOCKS is a networking proxy protocol. The Axis video encoder blade can be configured to use a SOCKS server to reach networks on the other side of a firewall/proxy server. This functionality is useful if the video encoder blade is located on a local network behind a firewall, and notifications, uploads, alarms, and such need to be sent to a destination outside the local network (such as the Internet). See the online help for more information.

QoS (Quality of Service)

Quality of Service (QoS) guarantees a certain level of a specified resource to selected traffic on a network. Quality can be defined as a maintained level of bandwidth, low latency, and no packet losses. The main benefits of a QoS-aware network can be summarized as:

- The ability to prioritize traffic and thus allow critical flows to be served before flows with lesser priority.
- Greater reliability in the network, thanks to the control of the amount of bandwidth an application may use, and thus control over bandwidth races between applications.

The QoS in Axis network video products marks the data packets for various types of network traffic originating from the product. This makes it possible for network routers and switches to reserve a fixed amount of bandwidth for these types of traffic. The video encoders mark the following types of traffic:

- video
- event/alarm
- management network traffic

QoS Settings – For each type of network traffic supported by your Axis network video product, enter a DSCP (Differentiated Services Codepoint) value. This value is used to mark the traffic's IP header. When the marked traffic reaches a network router or switch, the DSCP value in the IP header tells the router or switch the type of treatment to apply to this type of traffic, for example, how much bandwidth to reserve for it. Note that DSCP values can be entered in decimal or hex form, but saved values are always shown in decimal.

For more information on Quality of Service, please see the Axis support web at www.axis.com/techsup

SMTP (email)

Enter the host names (or IP addresses) and port numbers for your primary and secondary mail servers in the fields provided, to enable the sending of notifications and image email messages from the video encoder to predefined addresses via SMTP.

If your mail server requires authentication, check the box for **Use authentication to log in to this server** and enter the necessary information. See the online help for more information.

SNMP

The Simple Network Management Protocol (SNMP) allows remote management of network devices. Depending on the level of security required, select the version of SNMP to use. The three levels of security are:

- SNMP v1 - includes no security.
- SNMP v2c - uses very simple security. The community name can be specified as a password for read or read/write access to all supported SNMP objects. The community is the group of network devices using SNMP.
- SNMP v3 - provides encryption and secure passwords. HTTPS must be enabled.

Traps for SNMP v1/v2/v3

Traps are used by the video encoder blade to send messages to a management system for important events or status changes. These settings are used with SNMP v1/v2. To activate trap reporting, enter the IP address of the management server, and choose the trap community to use when sending a trap message to the management system.

SNMP v3 is a more secure version providing encryption and secure passwords. To use SNMP v3, HTTPS must be activated. To use traps with SNMP v3 an SNMP v3 management application is needed.

See the online help for more information.

UPnP™

The video encoder blade includes support for UPnP™. UPnP™ is enabled by default, and the video encoder blade then is automatically detected by operating systems and clients that support this protocol.

RTP/H.264

These settings are the port range, IP address, port number (video), and Time-To-Live value to use for the video stream(s) in multicast H.264 format. Only certain IP addresses and port numbers should be used for multicast streams. For more information, please see the online help .

Bonjour

The video encoders include support for Bonjour. When enabled, the video encoder blade is automatically detected by operating systems and clients that support this.

Ports & Devices

I/O Ports – the pinout, interface support and the control and monitoring functions provided by this connector are described in *Pin assignments*, on page 46.

COM Port

The COM port and serial connector allow you to connect legacy and auxiliary equipment to AXIS Q7414. After consulting the auxiliary device's user documentation, select the appropriate settings for connecting to AXIS Q7414. The COM port can enable the video encoder to receive status/data and send commands via either generic HTTP or IP/TCP applications, or control a PTZ device.

The serial port can be RS485 2-wire. For more information about the serial connector see page 46.

Setting up COM Port for a PTZ device

A PTZ driver needs to have been uploaded and installed before setting up the COM port. If this step has not been completed click the link Upload and select driver and complete this step before continuing.

1. Using an appropriate cable, connect the device to port RS-485. The port is available through the RS-485 connector. See RS-485 connector, on page 46.
2. Go to Port Settings, check Enable port and Pan Tilt Zoom.
3. In Serial Port Settings > Port mode, select port RS-485 2 wire.
4. For any additional settings that might be necessary, consult the driver's user documentation. Click the link Specify advanced device settings to gain access to driver specific settings for the PTZ device.
5. Click Save activate settings.

For more information please see the online help .

Maintenance

Maintain Server

Restart - the video encoder is restarted without changing any setting.

Restore - the video encoder is restarted and most current settings are reset to factory default values, meaning that the unit must be reconfigured and any event types and PTZ presets must be recreated. The settings that do not reset are:

- the boot protocol (DHCP or static)
- the static IP address
- the default router
- the subnet mask
- the system time
- IEEE 802.1X settings

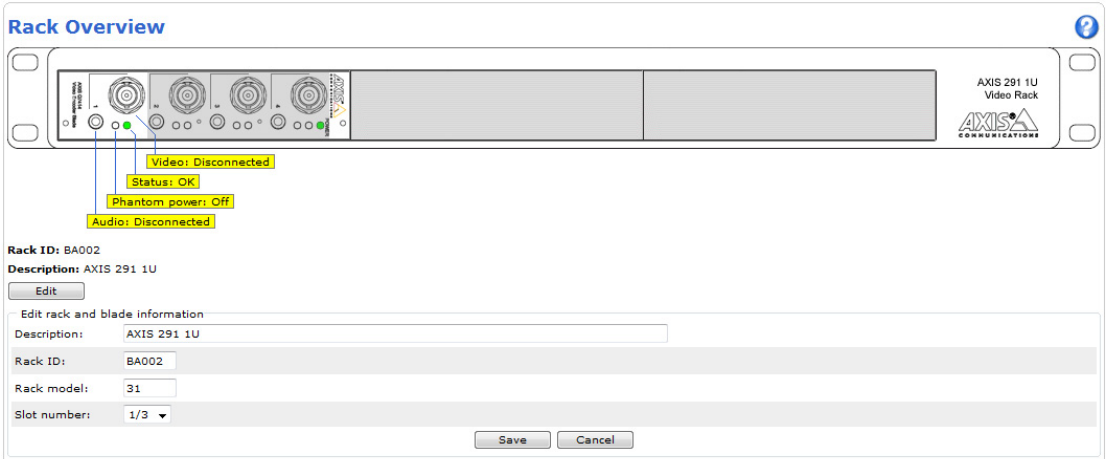
Default - the default button should be used with caution. Pressing this returns the video encoder's settings to the factory default values (including the IP address).

Upgrade Server – See *Upgrading the Firmware*, on page 48.

Identify

To help identify the physical channel of the IP address for maintenance purposes, a LED can be set to flash. Enter the number and choose the unit of time from the drop-down list. The LED can be set to flash for a number of seconds, minutes or even hours. Click **Flash LED** to initiate flashing.

Click **Rack Overview** to see a graphical representation and other information of where the blade is situated in the rack.



Support

The **Support Overview** page provides valuable information on troubleshooting and contact information, should you require technical assistance.

System Overview - is an overview of the video encoder's status and settings. Information that can be found here includes the video encoder's firmware version, IP address, security, event and image settings and recent log items. Many of the captions are also links to the proper **Setup page** to conveniently make adjustments in the video encoder's settings.

Logs & Reports - when contacting Axis support, please be sure to provide a valid Server Report with your query. The Access Log is automatically included in the server report.

Information - the **Logs,** the **Server Report** and the **Parameter List** may prove useful when troubleshooting a problem or when contacting the Axis support web.

System Log - Provides information about system events.

Access Log - The Access Log may be used for various purposes:

- Security - Tracking all access to the video encoder. The access log lists the IP addresses, users and networking protocols used to access the video encoder.
- Simple web attraction tracker.
- System analysis and trouble shooting.

Server Report - Provides information about the server status and should always be included when requesting support.

Parameter List - Shows the unit's parameters and their current settings.

Connection List - Lists all clients that are currently accessing video. It is also used for system analysis and troubleshooting.

Crash Report - Generates an archive with debugging information. The reports takes several minutes to generate.

Configuration

From the drop-down lists, select the size and level of information to be added to the System and Access Log files.

The default information level for the Access Log is set to Critical & Warnings. However, in an error situation and when requesting support, set it to the lowest information level Critical & Warnings & Info.

For the Log Level for Email, select from the drop-down list the level of information to send as email and enter the destination email address.

Advanced

Scripting is an advanced function that enables you to customize and use scripts. This function is a very powerful tool.

Caution!

Improper use may cause unexpected behavior or even cause loss of contact with the unit. If a script does cause problems, reset the unit to its factory default settings. A backup file may be of use to return the unit to its latest configuration.

Axis strongly recommends that you do not use this function unless you understand the consequences. Note that Axis support does not provide assistance for problems with customized scripts.
For more information, please visit the Developer pages at www.axis.com/developer

File Upload - To use your own files (web pages and images) as custom settings, they must first be uploaded to AXIS Q7414 video encoder. To do this, enter the name and path to the file in the field provided; or click the **Browse** button and select the file. Select the user level for the uploaded file. This helps you define user access to files. When the file is displayed correctly in the text field, click the **Upload** button. All uploaded files are shown in the list in the lower section of the page. To remove a file, check the box provided next to it and then click the **Remove** button.

Plain Config - this function is for the advanced user with experience of Axis video encoder configuration. All parameters can be set and modified from this page. Help is available from the standard help pages.

About

Here you can find basic information about your video encoder. You can also view third party software licenses.

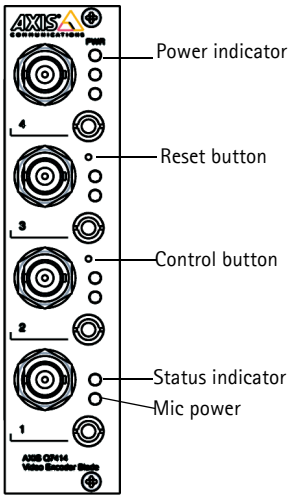
Resetting to the Factory Default Settings

This will reset all the parameters, in all 4 units (including all six IP addresses), to the factory default settings.

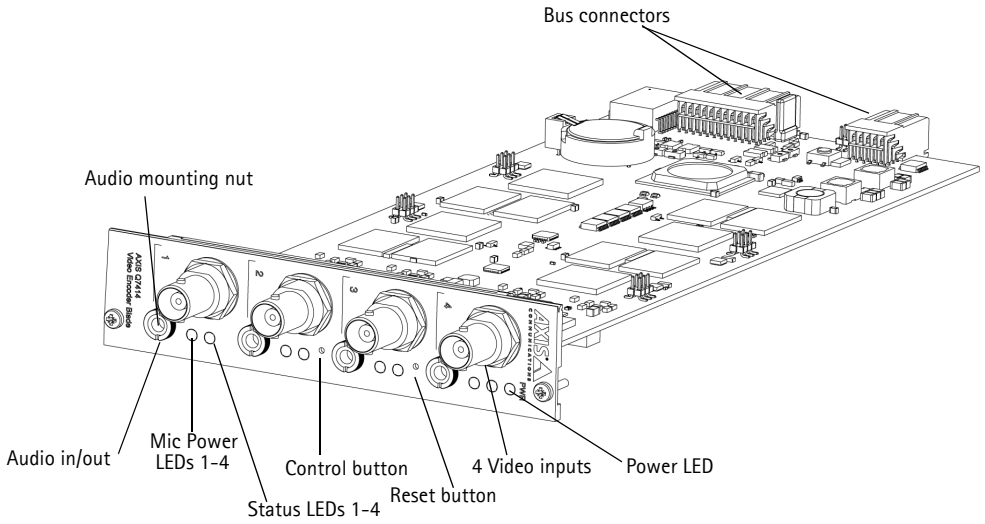
1. Press both the Reset button and Control button.
2. Release the Reset button and hold the Control button.
3. Keep the Control button pressed until the Power indicator turns green and the six Status indicators turn amber (this may take up to 15 seconds).
4. Release the Control button. When the Status indicators display green (which can take up to 1 minute) the process is complete and the video encoder has been reset.
5. Re-assign the IP addresses, using one of the methods described in this document.

To reset an individual unit to the original factory default settings, use the button provided in that unit's web interface. For more information, please see the online help.

Note: For other methods of setting the IP address, please refer to the product's Installation Guide that accompanies the product, or download a copy from www.axis.com



Unit connectors



Bus Connector – These are the physical interfaces to the video encoder rack, providing power, network, RS-485 and the I/O connections.

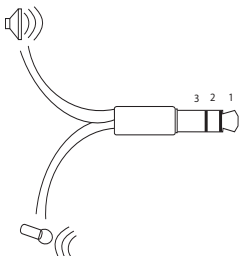
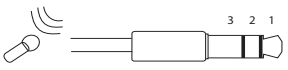
Control Button – This button is used to reset the video encoder to the factory default settings.

Reset Button – This button disconnects and reconnects power to the video encoder.

Audio in/out – 3.5 mm jack combined for both input and output. The jacks are compatible with M6 x 0.5 threaded locking collars.

- In: Balanced or unbalanced input for a mono microphone or line signal.
- Out: Audio out (line level), that can be connected to a public address (PA) system or an active speaker with built-in amplifier. A stereo connector must be used.

For best audio quality and when using long cables, use a balanced microphone and shielded cables. For a more secure connection, threaded audio connectors are recommended. In this case, the audio mounting nut will need to be removed see *Overview*, on page 5.

Pin	**Full-duplex, half-duplex, simplex unbalanced** • Microphone in (selectable 2.0V, 2.5V, 3.0V bias voltage) • Line in • Line out 	**Simplex balanced** • Microphone in (selectable 12V phantom power) • Line in 
1 Tip	Microphone/Line in	+ Microphone/Line in
2 Ring	Line out	- Microphone/Line in
3 Sleeve	GND	GND

Video Inputs - AXIS Q7414 supports 4 video sources. Each video input is terminated using a coax/BNC connector. Physical connections made using 75 Ohm coaxial video cable have a recommended maximum length of 800 feet (250 meters).

Note:

AXIS Q7414 does not have physical line termination DIP switches. If the product is to be connected in parallel with other equipment, 75 Ohm video terminations can be enabled/disabled on each input in the product's web pages at Video & Audio > Video Input > Video termination.

Pin assignments

Pin assignments for the I/O Connector of AXIS 291 1U Video Server Rack

Pin	Function	Description	
1	+12V out, 100mA		
2	GND		
3	Channel 1, Configurable I/O 1	Digital input - Connect to GND to activate, or leave floating (or unconnected) to deactivate. Digital output - Uses an open-drain NFET transistor with the source connected to GND. If used with an external relay, a diode must be connected in parallel with the load, for protection against voltage transients.	Min input = - 40V DC Max input = + 40V DC Max load = 100mA Max voltage = + 40V DC (to the transistor)
4	Channel 2, Configurable I/O 1		
5	Channel 3, Configurable I/O 1		
6	Channel 4, Configurable I/O 1		
7	Channel 1, Configurable I/O 2		
8	Channel 2, Configurable I/O 2		
9	Channel 3, Configurable I/O 2		
10	Channel 4, Configurable I/O 2		
11	Channel 1, RS485A (non-inverting) (Video input 1)	A half-duplex RS-485 interface for controlling auxiliary equipment e.g. PTZ devices.	
12	Channel 1, RS485B (non-inverting) (Video input 1)		

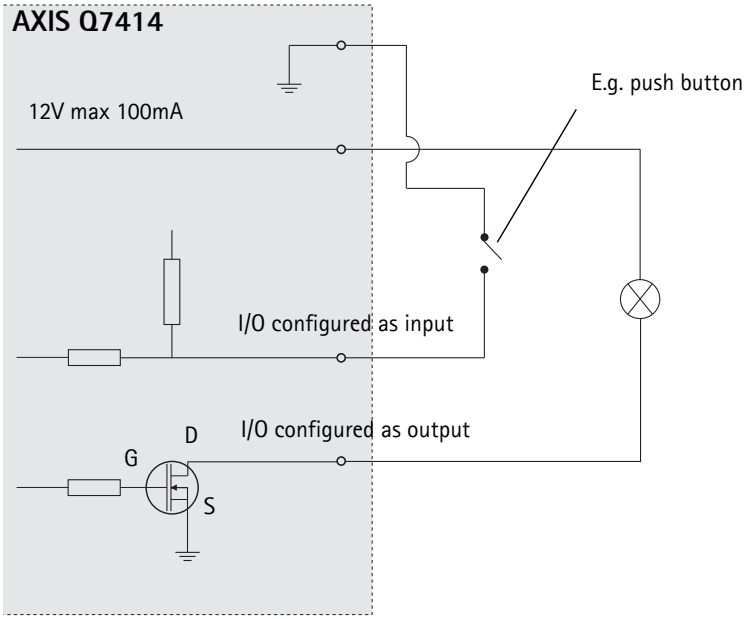
Pin assignments for the I/O Connector of AXIS Q7900 Rack

Pin	Function	Description	
1	Channel 1, Configurable I/O 1	Digital input - Connect to GND to activate, or leave floating (or unconnected) to deactivate. Digital output - Internal connection to ground when activated, floating (unconnected) when deactivated. If used with an external relay, a diode must be connected in parallel with the load, for protection against voltage transients.	Min input = - 40V DC Max input = + 40V DC Max load = 100mA Max voltage = + 40V DC (to the transistor)
2	Channel 2, Configurable I/O 1		
3	Channel 3, Configurable I/O 1		
4	Channel 4, Configurable I/O 1		
5	Channel 1, Configurable I/O 2		
6	Channel 2, Configurable I/O 2		
7	Channel 3, Configurable I/O 2		
8	Channel 4, Configurable I/O 2		
9-12	Not used		

Pin assignments for the RS-485 Connector of AXIS Q7900 Rack

Pin	AXIS Q7414
1	Channel 1, RS485A
2	Channel 1, RS485B
3	Channel 2, RS485A
4	Channel 2, RS485B
5	Channel 3, RS485A
6	Channel 3, RS485B
7	Channel 4, RS485A
8	Channel 4, RS485B
9 -12	Not used

The following connection diagram gives an example of how to connect an auxiliary device to AXIS Q7414.



Troubleshooting

Checking the Firmware

Firmware is software that determines the functionality of the video encoders. One of your first actions when troubleshooting a problem should be to check the current firmware version. The latest version may contain a correction that fixes your particular problem. The current firmware version in your encoder can be seen on the page **Setup > Basic Setup** or under **About.**

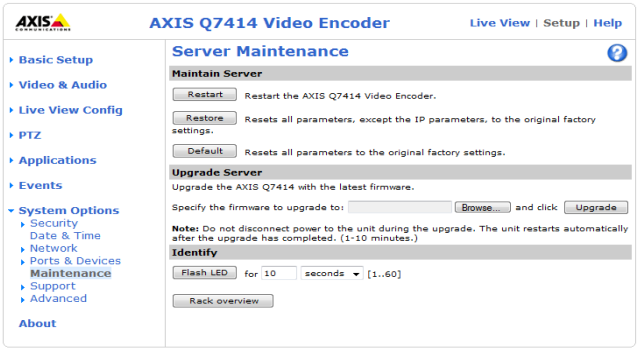
Upgrading the Firmware

When you upgrade your encoder with the latest firmware from the Axis Web site, your encoder receives the latest functionality available. Always read the upgrade instructions and release notes available with each new release, before updating the firmware.

Note:

Preconfigured and customized settings are saved when the firmware is upgraded (providing the features are available in the new firmware) although this is not guaranteed by Axis Communications. Always read the instructions and release notes available with each new release, before upgrading the firmware.

1. Save the firmware file to your computer. The latest version of the firmware is available free of charge from the Axis website at **www.axis.com/techsup**
2. Go to **Setup > System Options > Maintenance** in the encoder's web pages.
3. In the **Upgrade Server** section, browse to the desired firmware file on your computer. Click **Upgrade**.



Notes:

- After starting the upgrade process, always wait at least 5-10 minutes before restarting the encoder, even if you suspect the upgrade has failed.
- Your dealer reserves the right to charge for any repair attributable to faulty upgrading by the user.
- AXIS Camera Management can be used for multiple upgrades. Please see the Axis website at www.axis.com for more information.

Emergency Recovery Procedure

If power or the network connection to the encoder is lost during the upgrade, the process fails and the unit becomes unresponsive. A flashing red Status LED indicates a failed upgrade. To recover the unit, follow the steps below. The serial number is found on the label attached to the bottom of the encoder.

1. **UNIX/Linux** - From the command line, type the following:
   arp -s <IP address of encoder> <serial number> temp
   ping -s 408 <IP address of encoder>

   Windows - From a command/DOS prompt, type the following:
   arp -s <IP address of encoder> <serial number>
   ping -l 408 -t <IP address of encoder>
2. If the unit does not reply within a few seconds, restart it and wait for a reply. Press CTRL+C to stop Ping.
3. Open a browser and type in the encoder's IP address. In the page that appears, use the **Browse** button to select the upgrade file to use, for example, axisq7414.bin. Then click the Load button to restart the upgrade process.
4. After the upgrade is complete (1-10 minutes), the unit automatically restarts and shows a steady green on the Power and Status LEDs and flashing green or amber on the Network LED.
5. Reinstall the encoder, referring to the installation guide.

If the emergency recovery procedure does not get the encoder up and running again, please contact Axis support at www.axis.com/techsup/

Axis Support

If you contact Axis support, please help us to help you solve your problems by providing the server report, the log file and a detailed description of the problem.

Server Report - go to **Setup > System Options > Support > Support Overview**. The server report contains important information about the server and its software, as well as a list of the current parameters.

The **Log file** is available from **Setup > System Options > Support > Logs & Reports**. The Log file records events in the unit since the last system restart and can be a useful diagnostic tool when troubleshooting.

Symptoms, Possible Causes, and Remedial Action

Problems setting the IP address	
When using ARP/Ping	Try the installation again. The IP address must be set within two minutes after power has been applied to the encoder. Ensure the Ping length is set to 408. See the Installation Guide.
The encoder is located on a different subnet	If the IP address intended for the encoder and the IP address of your computer are located on different subnets, you will not be able to set the IP address. Contact your network administrator to obtain an appropriate IP address.
The IP address is being used by another device	Disconnect the encoder from the network. Run the Ping command. (In a Command/DOS window, type **ping** and the **IP address** of the unit). If you receive: **Reply from <IP address>: bytes = 32; time = 10 ms.....** - this means that the IP address may already be in use by another device on your network. You must obtain a new IP address and reinstall the unit. If you see: **Request timed out** - this means that the IP address is available for use with your encoder. In this case, check all cabling and reinstall the unit.
Possible IP address conflict with another device on the same subnet	The static IP address in the encoder is used before the DHCP server sets a a dynamic address. This means that if the same default static IP address is also used by another device, there may be problems accessing the encoder. To avoid this, set the static IP address to 0.0.0.0.
The encoder cannot be accessed from a browser	
Problems with ONVIF	If ONVIF is not working as expected, it may be that for security reasons ONVIF was disabled when the video encoder was accessed over VAPIX. To enable ONVIF, reset the product to Factory default settings (see page 44).
The IP address has been changed by DHCP	If the encoder and client are on the same network, Run AXIS IP Utility to locate the encoder. Identify the encoder using its model or serial number Alternatively: 1) Move the encoder to an isolated network or to one with no DHCP or BOOTP server. Set the IP address again, using AXIS IP Utility (see the Installation Guide) or the ARP/Ping commands. 2) Access the unit and disable DHCP in the TCP/IP settings. Return the unit to the main network. The unit now has a fixed IP address that will not change. 3) As an alternative to 2), if dynamic IP address via DHCP or BOOTP is required, select the required service and then configure IP address change notification from the network settings. Return the unit to the main network. The unit now has a dynamic IP address, but will notify you if the address changes.
Other networking problems	Test the network cable by connecting it to another network device, then Ping that device from your workstation. See instructions above.
Encoder is accessible locally, but not externally	
Broadband router configuration	To configure your broadband router to allow incoming data traffic to the encoder, enable the NAT-traversal feature which will attempt to automatically configure the router to allow access to the encoder. This is enabled from **Setup > System Options > Network > TCP/IP Advanced**.
Firewall protection	Check the Internet firewall with your system administrator.
Default routers required	Check if you need to configure the default router settings.
Problems with the H.264 format	
No H.264 displayed in the client	Check that the correct network interface is selected in the AMC control panel applet (network tab).
	Check that the relevant H.264 connection methods are enabled in the AMC control panel applet (network tab).
	In the AMC control applet, select the H.264 tab and click the button Set to default H.264 decoder.
No multicast H.264 displayed in the client	Check with your network administrator that the multicast addresses used by the encoder are valid for your network.
	Check with your network administrator to see if there is a firewall preventing viewing.
Multicast H.264 only accessible by local clients	Check if your router supports multicasting, or if the router settings between the client and the server need to be configured. The TTL (Time To Live) value may need to be increased.
Poor rendering of H.264 images	Color depth set incorrectly on clients. Set to 16-bit or 32-bit color.
	If text overlays are blurred, or if there are other rendering problems, you may need to enable Advanced Video Rendering from the H.264 tab in the AMC control panel applet.
	If images are jagged try antialiasing under Video & Audio > Camera Settings.
	Ensure that your graphics card is using the latest device driver. The latest drivers can usually be downloaded from the manufacturer's web site.

Color saturation is different in H.264 and Motion JPEG	Modify the settings for your graphics adapter. Please see the adapter's documentation for more information.
Lower frame rate than expected	Reduce number of applications running on the client computer.
	Limit the number of simultaneous viewers.
	Check with the system administrator that there is enough bandwidth available. See also the online help.
	Check in the AMC control panel applet (H.264 tab) that video processing is not set to **Decode only I frames**.
	Lower the image resolution.
Why do I not get 30 frames per second?	See the section. *General performance considerations,* on page 55
Image degeneration	Decrease the GOV length, see the online help for more information.
No Audio	
Incorrect setup	Check the sound card in the PC. Ensure that the mute button is not pressed and the volume settings are correct.
No audio or very poor audio quality	Check that the correct Source (Microphone or Line) is selected under Setup > Audio > Audio Settings.
Audio volume too low/high	
Volume settings incorrect	The volume of the microphone is either too high or too low. Change the volume for the microphone in the toolbar on the Live View page.
Poor audio quality	
CPU overloaded	Reduce the number of clients.
Distorted audio	Adjust the input gain, see page 18.
Echo	Feedback loops might appear in full-duplex mode. Try moving the microphone or the speaker, or use half-duplex mode instead.
The Status indicator LED is flashing red rapidly	
Hardware failure	Contact your Axis dealer.
The Status indicator LED is flashing red and the encoder is inaccessible	
A firmware upgrade has been interrupted or the firmware has otherwise been damaged	See the *Emergency Recovery Procedure,* on page 48.
No images displayed on web page	
Problem with AMC. (*Internet Explorer only*)	To enable the updating of video images in Microsoft Internet Explorer, set your browser to allow ActiveX controls. Also, make sure that AXIS Media Control (AMC) component is installed on your workstation.
Installation of additional ActiveX component restricted or prohibited	Configure your encoder to use a Java applet for updating the video images under **Live View Config > Layout > Default Viewer** for Internet Explorer. See the online help for more information.
Video/Image problems, general	
Image too dark or too light	Check the video image settings. See the online help on Video and Image Settings.
Missing images in uploads	This can occur when trying to use a larger image buffer than is actually available. Try lowering the frame rate or the upload period.
Slow image update	Configuring pre-buffers, motion detection, high-resolution images, or high frame rates, will affect the performance of the encoder.
Poor performance	Poor performance may be caused by heavy network traffic, multiple users accessing the unit, low performance clients, use of features such as Motion Detection, Event handling, Image rotation other than 180 degrees.
Poor quality snapshot images	
Screen incorrectly configured on your workstation	In Display Properties, configure your screen to show at least 65000 colors, that is, at least 16-bit. Using only 16 or 256 colors will produce dithering artifacts in the image.
Overlay/Privacy mask is not displayed	
Incorrect size or location of overlay or privacy mask.	The overlay or privacy mask may have been positioned incorrectly or wrong resolution may have been used while positioning. Refer to the online help for information on the limitations when using image overlays and privacy masks.
Browser freezes	
Older browsers	Update your browser and Java to latest versions.

Problems uploading files	
Limited space	There is only limited space available for the upload of your own files. Try deleting existing files to free up space.
Motion Detection triggers unexpectedly	
Changes in luminance	Motion detection is based on changes in luminance in the image. This means that if there are sudden changes in the lighting, motion detection may be triggered mistakenly. Lower the sensitivity setting to avoid problems with luminance.

For further assistance, please contact your reseller or see the support pages on the Axis website at www.axis.com/techsup

Technical Specifications

Function/group	Item	Specification
Video	**Video compression**	• H.264 (MPEG-4 Part 10/AVC) • Motion JPEG
	Resolutions	NTSC: 720x480 (D1) to 176x120 (QCIF) PAL: 720x576 (D1) to 176x144 (QCIF)
	Frame rate H.264	30/25 (NTSC/PAL) fps in all resolutions
	Frame rate Motion JPEG	30/25 (NTSC/PAL) fps in all resolutions
	Video streaming	• Multi-stream H.264 and Motion JPEG: 3 simultaneous individually configured streams in max. resolution at 30/25 fps; more streams if identical or limited in frame rate or resolution. • Controllable frame rate and bandwidth • VBR/CBR H.264
	Image settings	• Compression, color, brightness, contrast • Rotation: 90°, 180°, 270° • Aspect ration correction • Mirroring of images • Text and image overlay • Privacy mask • Enhanced deinterlace filter • Video termination • Antialiasing
	Pan/Tilt/Zoom	• Wide range of analog PTZ cameras supported (drivers available for download at www.axis.com) • 100 presets/camera, guard tour, PTZ control queue • Supports Windows compatible joysticks
	Users	• 20 simultaneous users • Unlimited number of users using multicast (H.264)
Audio	**Audio streaming**	Two-way, full duplex and half duplex (Unbalanced input/line output) Simplex (balanced/unbalanced input)
	Audio compression	In: AAC-LC 8 or 16 kHz 8-64 kbit/s, G.711 PCM 8 kHz 64 kbit/s, G.726 ADPCM 8 kHz 32 or 24 kbit/s Out: G.711 PCM 8 kHz 64 kbit/s, μ-law PCM 16 kHz 128 kbit/s, G.726 ADPCM 8 kHz 32 kbit/s or 24 kbit/s
	Audio input/output	External microphone input or line input (balanced or unbalanced) and line output (unbalanced), Phantom Power
Network	**Security**	Password protection, IP address filtering, HTTPS encryption, IEEE 802.1X network access control, digest authentication, user access log
	Supported protocols	IPv4/v6, HTTP, HTTPS*, QoS Layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS. *This product includes software developed by the Open SSL Project for use in the Open SSL Tool kit (www.openssl.org)

Function/group	Item	Specification
System Integration	**Application Programming Interface**	• Open API for software integration, including VAPIX® from Axis Communications available at www.axis.com • AXIS Camera Application Platform from Axis Communications; specifications available at www.axis.com • Includes the ONVIF specification available at www.onvif.org • Support for AXIS Video Hosting System (AVHS) with One-Click Camera connection
	Intelligent Video	Video motion detection, audio detection, active tampering alarm Support for AXIS Camera Application Platform enabling installation of additional applications
	Alarm triggers	• Intelligent video • External input • Video loss
	Alarm events	• File upload via FTP, HTTP and email • Notification via email, HTTP and TCP • PTZ preset • External output activation • Play audio clip • Pre- and post-alarm video buffering
General	**Processors, memory**	• 4x ARTPEC-3 • 4x 256 MB RAM • 4x128 MB Flash • Battery backed-up real-time clock
	Power	• 12 V DC, max. 13.0 W
	Connectors	• 4 analog composite video BNC inputs • 4 3.5 mm jacks for mono microphone or line input (max 6 Vpp) and mono line output (typical 1.8 Vpp at 1 kOhm) • 10BASE-T/100BASE-TX/1000Base-T Ethernet • 8 configurable external inputs/outputs • Up to 4 RS-485/422 half duplex, depending on the rack
	Operating conditions	• 0 °C to 45 °C (32 °F to 113 °F) Humidity 20 - 80% RH (non-condensing)
	Approvals	• EN 55022 Class B • EN 61000-3-2 • EN 61000-3-3 • EN 55024 • EN61000-6-1 • EN61000-6-2 • FCC Part 15 Subpart B, Class B • ICES-003 Class B • VCCI Class B • C-tick AS/NZS CISPR 22 • KCC Class A • UL/IEC/EN 60950-1
	Dimensions (HxWxD)	• 30 x 129 x 255 mm (1.2" x 5.1" 10.0") excluding connectors
	Weight	• 229 g (0.5 lb.)
	Included accessories	Installation Guide, CD with installation tools and management tools, software and User's Manual, 4 Windows decoder user licenses
	Video management software (not included)	AXIS Camera Station - Video management software for viewing and recording up to 50 cameras See www.axis.com/products/video/software/ for more software applications via partners
	Required hardware	AXIS Q7900 rack or AXIS 291 1U Rack

General performance considerations

When setting up your system, it is important to consider how various settings and situations will affect performance. Some factors affect the amount of bandwidth (the bit rate) required, others can affect the frame rate, and some affect both. If the load on the CPU reaches its maximum, this will also affect the frame rate.

The following factors are among the most important to consider:

- High image resolutions and/or lower compression levels result in larger images. Bandwidth affected.
- Access by large numbers of Motion JPEG and/or unicast H.264 clients. Bandwidth affected.
- Simultaneous viewing of different streams (resolution, compression) by different clients. Effect on frame rate and bandwidth.
- Accessing both Motion JPEG and H.264 video streams simultaneously. Frame rate and bandwidth affected.
- Heavy usage of event settings affects the video encoder's CPU load. Frame rate affected.
- Heavy network utilization due to poor infrastructure. Framerate affected.
- Viewing on poorly performing client PCs lowers perceived performance. Frame rate affected.

Index

A
Action 28
Action Buttons 20
Active/Inactive 21
Administrator 13
Alarm 32
AMC 6
ARP/Ping 36
AVHS 37

B
Bonjour 6
Buffer Size 30
Buffers 30

C
CGI links 26
Click-in-image 26

D
Date & Time 35
Default Viewer 19
DNS Configuration 37
DNS Server 37
Domain Name 37

E
Emergency Recovery 48
Enable ARP/Ping 36
Event Servers 28
Events 28

F
Frame Rate 14
FTP Server 28

G
GOV Settings 15

H
Host Name 37
HTTP API 26
HTTP Server 28
HTTP-API 12
HTTPS 8, 34

I
I/O Ports 40
Installing PTZ devices 22
IP Address Filtering 34

L
Live View Config 19
Logs & Reports 42

M
Motion Detection 32

N
NAT traversal 7, 37, 38
Network Settings 36
NTP Server 36

O
Output Buttons 21

P
Pan/Tilt/Zoom 25
Ports & Devices 40
Post-trigger Buffer 30
Preset positions 23
Pre-trigger Buffer 30
PTZ commands 26
Pulse 21

Q
QuickTime 12, 19

R
Recovery 48
Referrals 34
Relative and absolute PTZ drivers 25
Restore 41

S
Scheduled Event 28, 30
Security 34
Server Time 35
Snapshot button 9
SNMP 39
Support 42
System Options 34

T
TCP Server 28
TCP/IP Settings 36
Time Mode 36
Triggered Event 28
Troubleshooting 48

U
Upgrade Server 41
UPnP 37, 39
Users 34

V
Video Stream 14
Video streams 11